

Nos. 23-1582, 23-1586

IN THE
**United States Court of Appeals
for the Federal Circuit**

WIRELESS DISCOVERY LLC,

Plaintiff-Appellant,

v.

THE MEET GROUP, INC. AND eHARMONY, INC.,

Defendants-Appellees.

ON APPEAL FROM THE UNITED STATES DISTRICT COURT FOR THE DISTRICT OF
DELAWARE, CASE NOS. 22-480, -484, HON. GREGORY B. WILLIAMS

**[CORRECTED] OPENING BRIEF AND ADDENDUM OF
PLAINTIFF/APPELLANT WIRELESS DISCOVERY LLC**

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Claim 10 of the '875 patent:

A method comprising:

providing, via a computing device, accessible through any of an internet connection and a mobile telecommunications provider network, access to stored user profile information about a first user using a respective first mobile communications device and a second user, using a respective second mobile communications device;

receiving, via the computing device, indications of the locations of the first and second mobile communications devices;

receiving, via the computing device, a unique device hardware identifier from all communications devices from all users linked in a social network to associate with profiles and authenticate when users sign into a user account, sending, via the computing device, to the second mobile communications device, an invitation to accept any of an invitation to connect and personal attribute information from, or share personal attribute information with, the first user, upon receipt of permission from the second user to receive personal attribute information about, or share personal attribute information with, the first user; and

connecting, via the computing device, the first user and the second user through the computing device for personal communication between first user and the second user, the personal communication comprising one or more SMS, E-mail, chat/instant messaging, multimedia, voice or video,

wherein the computing device is configured to locate information about the second user from a social network file of the second user, and transmit this information to the first mobile communications device, and

wherein the first and second users are members of a same social network, and the computing device is operable to disclose social network attributes such as a picture, name, and a location of first and second users in the vicinity or within a particular distance from one another for the purpose of connecting members.

FORM 9. Certificate of Interest

Form 9 (p. 1)
March 2023

**UNITED STATES COURT OF APPEALS
FOR THE FEDERAL CIRCUIT**

CERTIFICATE OF INTEREST

Case Number 23-1582, 23-1586

Short Case Caption Wireless Discovery LLC v. The Meet Group, Inc.

Filing Party/Entity Wireless Discovery LLC

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Date: 05/26/2023

Signature: /s Nagendra Setty

Name: Nagendra Setty

FORM 9. Certificate of Interest

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1. Represented Entities. Fed. Cir. R. 47.4(a)(1).	2. Real Party in Interest. Fed. Cir. R. 47.4(a)(2).	3. Parent Corporations and Stockholders. Fed. Cir. R. 47.4(a)(3).
Provide the full names of all entities represented by undersigned counsel in this case.	Provide the full names of all real parties in interest for the entities. Do not list the real parties if they are the same as the entities. <input checked="" type="checkbox"/> None/Not Applicable	Provide the full names of all parent corporations for the entities and all publicly held companies that own 10% or more stock in the entities. <input checked="" type="checkbox"/> None/Not Applicable
Wireless Discovery LLC		

☐ Additional pages attached

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March 2023

4. Legal Representatives. List all law firms, partners, and associates that (a) appeared for the entities in the originating court or agency or (b) are expected to appear in this court for the entities. Do not include those who have already entered an appearance in this court. Fed. Cir. R. 47.4(a)(4).

☐ None/Not Applicable ☒ Additional pages attached

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☒ None/Not Applicable ☐ Additional pages attached

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CERTIFICATE OF COMPLIANCE

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STATEMENT OF RELATED CASES

On March 15, 2023, Wireless Discovery filed six appeals in the infringement actions against The Meet Group, Inc. and eHarmony, Inc. (Nos. 23-1582 (lead), 23-1586) and Coffee Meets Bagel, Inc., Down App, Inc., Grindr, Inc., and Hily Corp. (Nos. 23-1584, 23-1583 (lead), 23-1591, and 23-1592). On April 6, 2023, this Court issued a notice that both sets of appeals (Nos. 23-1582, 23-1583) would be treated as companion cases and assigned to the same merits panel.

INTRODUCTION

The district court’s memorandum orders at issue reduce the patents at issue to an oversimplified version of their true selves, ignoring the technical nuance, and thus declare the claims are directed to abstract ideas that have been practiced forever. In its own words, the court reasoned that “the basic concept of controlled exchange of information about people as historically practiced by matchmakers and headhunters’ [are] drawn to an abstract idea and claims directed to ‘[m]atching based on geographic location’ [is] abstract.” *Citing Walker Digit., LLC v. Google, Inc.*, 66 F. Supp. 3d 501, 508 (D. Del. 2014) (first quote); *Perry St. Software, Inc. v. Jedi Techs., Inc.*, 548 F. Supp. 3d 418, 433 (S.D.N.Y. 2021) (second quote). (APPX069, APPX089.) With that starting premise, it is not surprising that the court found that all four asserted patents “are directed to the abstract idea of social networking.” (*Id.*) Yet, as detailed below, the claims at issue are directed to neither the historic practices of matchmakers or matching purely based on location, and the court’s simplification, while expedient, is simply not accurate.

The historic practices of matchmakers and headhunters conjures images of *shadkhan* in Israel, the *nakōdo* in Japan, or any of our aunts or family friends wanting to introduce us to that perfect person. This age-old practice relied on word of mouth, known contacts, friends of friends, or astrological consultants, coalescing into the occasionally dark art of matchmaking. The modern iteration of

and replacement for such practices are what many now know as dating apps – whether Tinder, Bumble, or eHarmony, the basic premise of being introduced to persons with similar interests or traits is now commonplace and perhaps a bit more scientific, at least from the perspective of the technology providers. We now accept them as a normal part of adult life and as a vehicle for dating. We are accustomed to seeing someone swipe right or left and reveal a wry smile when one does it in front of us.

Those modern experiences, whether firsthand or secondhand, hearing our friends talk about their latest experiences with dating apps, can distort our historic perspective and make such apps and technologies now seem routine and commonplace. That is the very definition of hindsight. The district court, here, appears to have applied that hindsight view of how the claimed inventions fit into a circa-2022 world of social networking applications. (APPX074, APPX092 (“Wireless Discovery fails to show how the alleged inventive concepts are more than well-understood, routine, or conventional.”)) So, to reset our thought process around the year 2008, when the inventions taught and claimed in the four asserted patents were conceived and reduced to practice, historic perspective is helpful.

The provisional patent leading to the suite of patents Wireless Discovery has successfully garnered was filed in 2008. At that early date in the evolution of smartphones and other capable devices, there were no mobile dating applications

or social networking applications, at least as we now know them. Apple introduced its first iPhone in 2007. [https://en.wikipedia.org/wiki/IPhone_\(1st_generation\)](https://en.wikipedia.org/wiki/IPhone_(1st_generation)).

Before that, most of us were happily using our Blackberrys, Nokia phones, Motorola Razors, or Palm Pilots. We used our phones mostly to actually speak with people and to email or text, but not much more. That reality means that when Wireless Discovery's predecessor-in-interest (Ximoxi, Inc.) filed its first patent application, the mobile phone landscape was comprised of different phones, on different operating systems, employing different wireless technologies, such as analog, TDMA, CDMA, and GSM. When one got off the plane in Europe or Asia, at that time, a US mobile phone was useless.

While interoperability and compatibility are commonplace today in a world dominated by phones running iOS and Android operating systems, that was simply not the case in 2008. That is why the patent's use of authentication as a predicate to social network access and a device-independent hardware ID were so important, as the touchstone for determining whether one was an authentic member of a social network, analogous to one's public face, and also a creative solution to the compatibility problem. Secure authentication also meant that the user's data and overall experience was far more private and protected.

Social media applications were first introduced around that time, when Facebook introduced a rudimentary functionality called "Facebook for Mobile" in

2006 and its first app for iPhone in 2008. <https://www.cnet.com/pictures/facebook-then-and-now-pictures/19/>. Instagram then came along in 2010.

<https://en.wikipedia.org/wiki/Instagram>. Dating apps seemingly naturally followed these social media applications, as iPhone and Android phone platforms and capabilities improved. Tinder launched its mobile app in late 2012 ([https://en.wikipedia.org/wiki/Tinder_\(app\)](https://en.wikipedia.org/wiki/Tinder_(app))), Bumble in late 2014 (<https://en.wikipedia.org/wiki/Bumble>), and, one decade later, they are wholly “well-understood, routine, or conventional” (APPX074, APPX092), but not in 2008.

Below, Wireless Discovery has detailed each of the technological improvements it described and claimed in the four asserted patents. These patents do not simply take the prior idea of matchmaking and say “do it on a mobile device.” The patents disclose, and the claims claim, authenticated, cross-hardware, cross-software, cross-wireless-network, dynamic-location- and static-location-sensitive matchmaking of people using the app. The district court gave little or no consideration to these features. Affording these improvements their proper weight, this Court should reverse the holding below, which wrongly concluded on a Fed. R. Civ. P. 12(b)(6) motion to dismiss that the patents-at-issue are invalid under 35 U.S.C. § 101.

JURISDICTIONAL STATEMENT

This Court has jurisdiction over this appeal under 28 U.S.C. § 1295(a)(1).

STATEMENT OF THE ISSUES

1. Whether the district court erred in concluding that the inventions described and claimed in the four asserted patents are directed to abstract ideas under *Alice* step one and thus ineligible subject matter under 35 U.S.C. § 101?
2. Whether the district court erred in concluding that the inventions described and claimed in the four asserted patents lack any inventive concepts under *Alice* step two and are thus ineligible subject matter under 35 U.S.C. § 101?

STATEMENT OF THE CASE

On April 13, 2022, Wireless Discovery sued eHarmony for infringement of the ‘875 patent in the District of Delaware (Case No. 22-480-GBW). On the same day, it sued The Meet Group, Inc. (Case No. 22-484-GBW), which were consolidated together for pretrial proceedings, as both defendants retained the same counsel. Also on the same day, it sued Coffee Meets Bagel, Inc. (Case No. 22-478-GBW), Down App, Inc. (Case No. 22-479-GBW), Grindr, Inc. (Case No. 22-481-GBW), and the Hily Corp. (Case No. 22-482-GBW), all four of which matters were consolidated for pretrial proceedings because they each retained the same counsel. In all six of these actions, Wireless Discovery amended its complaints to add infringement claims for the ‘352 patent, the ‘267 patent, and the ‘397 patent,

each of which is related to and adds to the ‘875 patent. (APPX055, APPX078.) The court received briefing on defendants’ motions to dismiss under Fed. R. Civ. P. 12(b)(6) and issued two orders on February 6, 2023, dismissing all four causes of action against all defendants. (APPX054, APPX077.) Wireless Discovery filed six notices of appeal on March 6, 2023, which this Court docketed on March 15, 2023.

STATEMENT OF FACTS

As outlined above, the district court gave little or no weight to key elements in the asserted claims of the four asserted patents. We turn to those features, excerpting from the patent specifications and claims.

Wireless Discovery set out to solve several technological problems in circa-2008 social networking systems and software

As an initial matter, the inventor on all four Wireless Discovery patents did not set out to claim or preempt the field of social networking applications, contrary to the district court’s conclusions. Rather, the inventor offered solutions to the problem of connecting disparate devices with hardware, software, and network connectivity limitations that existed, circa-2008. As the ‘875 patent provides in its summary of invention:

According to the invention, a process of discovery and exchange of contact information may provide the mobile device user (or users) with an experience of exchanging highly personal information with someone nearby, after that person has been discovered using existing standard Bluetooth technology, but without the need to reprogram or adapt a standard cellphone to permit exchanges of personal information over, *e.g.*, a PAN, such as pictures or a VCard level of

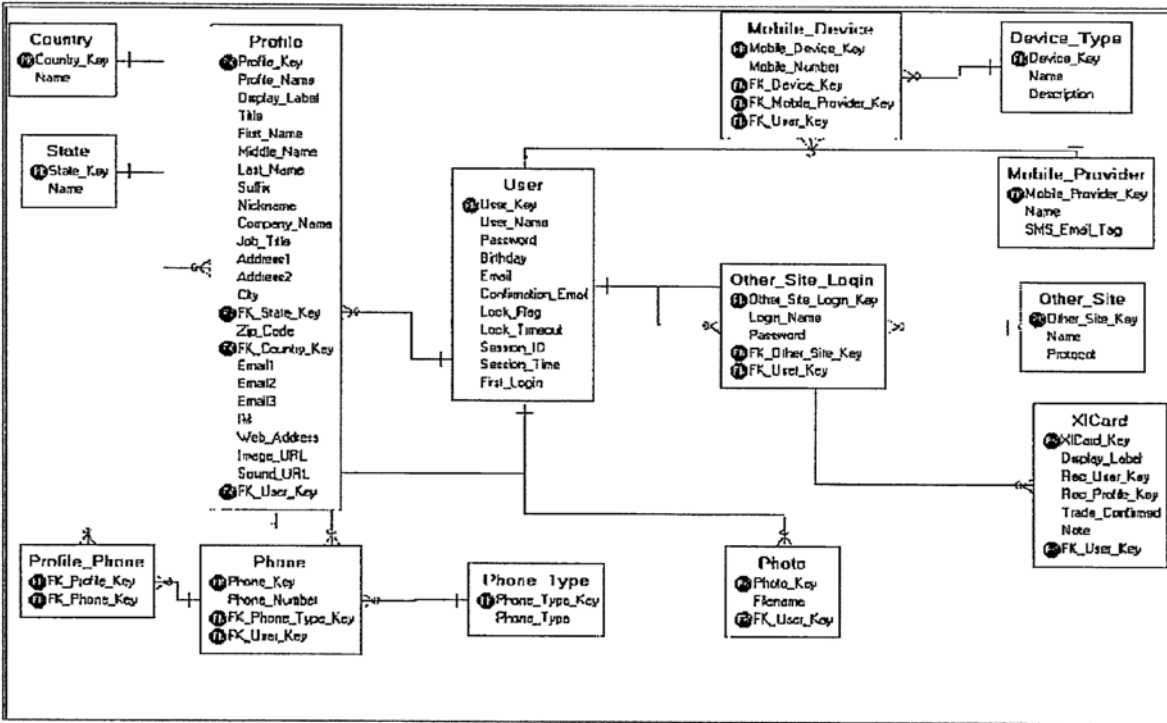
personal information. Thus, the invention offers the advantage of not being limited to similar mobile devices, and capable of being implemented on almost any type of mobile communication device, *e.g.*, a standard cell phone, since the personal information exchange does not occur via direct communication between the mobile devices, although the user has this type of experience when socializing since there can be a nearly real time exchange of personal information with someone whom he/she has just discovered over a PAN, or a WiFi network, for example. (APPX112.)

So, as its goal, the inventor sought to allow otherwise incompatible devices to be discovered and to then communicate through a gateway or other intermediating device, while still creating a user experience of the two users communicating directly with each other.

Discovering user devices was difficult due to divergent manufacturer technologies

To discover, authenticate, and then allow communication between otherwise incompatible devices, the '875 patent depicts a robust record for each user, which contains detailed user information, information about the maker and type of device the user will use, the network provider being used and that provider's particular communication capabilities. (APPX098.) A sample record is provided as Figure 2 of the '875 patent.

FIG. 2



Once assigned, the record would also allow the gateway to identify authenticated users and associate their profiles with a unique hardware identifier or address, as shown in Figure 5 of the ‘875 patent with the labels “device 1 address”, “device 2 address”, etc. The ‘875 patent describes these addresses as follows:

FIG. 6 illustrates the discovery of the three discovered users from FIG. 5 using the requesting user's mobile device. The requesting user's resident CSA, upon receiving the three respective Bluetooth device ID addresses, i.e., addresses for device 1, device 2 and device 3, (the "addresses" may be broadly construed to include any unique identifier Such as a Bluetooth device address, or unique identifier selected from a WiFi address, or main component address or an IMEI which is the international Mobile Station Equipment identif[ier]) sends information to the network server via the cellular phone network. (APPX117.)

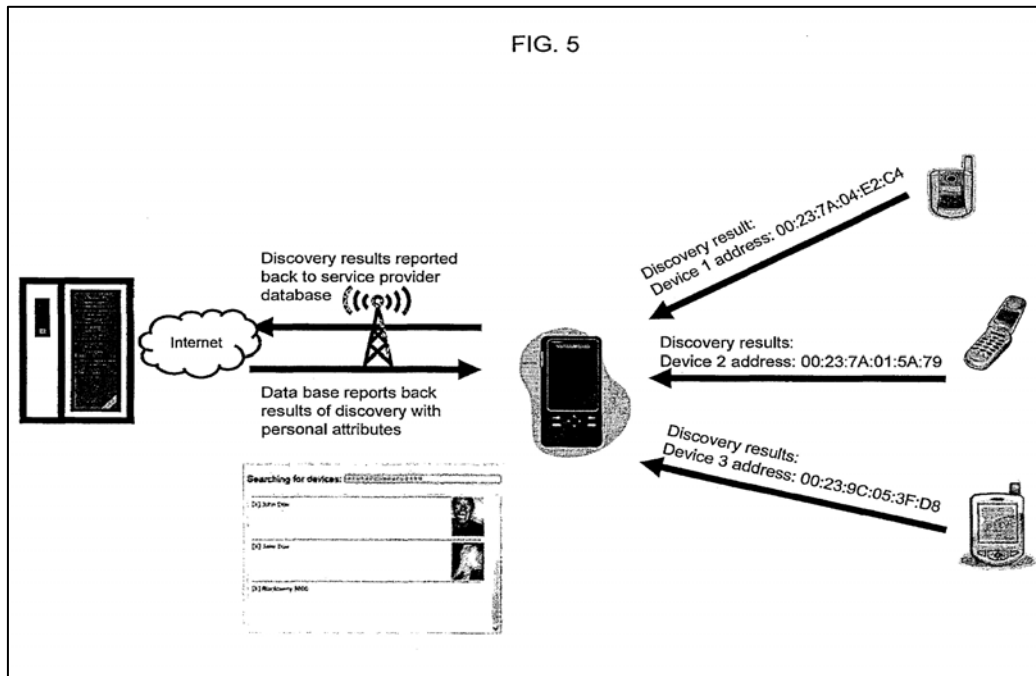
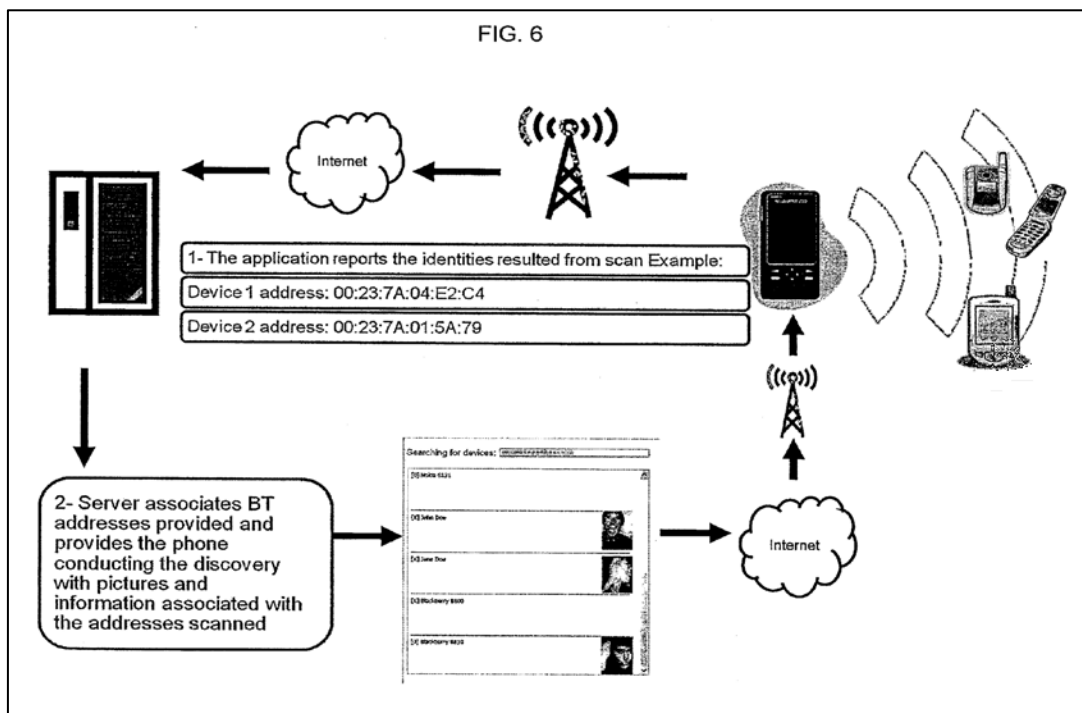


Figure 6 shows the three devices from Figure 5, each from a different manufacturer, registering with the gateway or server and then being associated with the addresses logged in Figure 5. (APPX102.)



Strong security and privacy were specific problems the inventor sought to address

After this initial hardware identifier-based discovery process, the claimed invention teaches the use of an additional authentication process to ensure accuracy, enhance security, and further users' privacy.

An 'Authentication' portion requests authentication parameters from a user (ID or user login name and password); connects to an instance of server, sends user authorization information to the server side using ID or user name and password; displays a reason for denied access in case of incorrect login; and exits from the Software in case of a preset number of incorrect logins; allows a user to change the password, downloads profile information from the server.

The claimed system thus uses unique hardware identifiers, in the first instance, to allow incompatible devices to register with the gateway or server and then adds the layer of requiring a user to engage in a credential-based login that authenticates their legitimate presence on the social network.

In step 3 of claim 10 of the '875 patent¹, these two additive processes are set forth, serially, as: "receiving, via the computing device, a *unique device hardware*

¹ Claim 10 of the '875 patent:

A method comprising:

providing, via a computing device, accessible through any of an internet connection and a mobile telecommunications provider network, access to stored user profile information about a first user using a respective first mobile communications device and a second user, using a respective second mobile communications device;

identifier from all communications devices from all users linked in a social network to associate with profiles and *authenticate* when users sign into a user account.” (APPX120.)² This ordered combination of elements is not akin to any “historic practice of matchmaking” (APPX069, APPX089) and is also not found in

receiving, via the computing device, indications of the locations of the first and second mobile communications devices;

receiving, via the computing device, a *unique device hardware identifier* from all communications devices from all users linked in a social network to associate with profiles and *authenticate* when users sign into a user account, sending, via the computing device, to the second mobile communications device, an invitation to accept any of an invitation to connect and personal attribute information from, or share personal attribute information with, the first user, upon receipt of permission from the second user to receive personal attribute information about, or share personal attribute information with, the first user; and

connecting, via the computing device, the first user and the second user through the computing device for personal communication between first user and the second user, the personal communication comprising one or more SMS, E-mail, chat/instant messaging, multimedia, voice or video,

wherein the computing device is configured to locate information about the second user from a social network file of the second user, and transmit this information to the first mobile communications device, and

wherein the first and second users are members of a same social network, and the computing device is operable to disclose social network attributes such as a picture, name, and a location of first and second users in the vicinity or within a particular distance from one another for the purpose of connecting members.

² Claim 20 of the ‘875 patent also includes these two processes, but in the context of a computer readable medium claim. (APPX120-21.)

the *NetSoc* patents (USPN 9,218,591 or 9,978,107) or any of the other patents in the cases to which the district court cites. (APPX069, APPX089.) The words “authenticate” or “security” do not even appear in those patents, as they truly were directed to the method of connecting persons with similar interests and did not seek to solve any of the technical problems inherent in connecting users with potentially incompatible devices and then allowing authenticated, secure communication, thereafter. These processes also demonstrate that the asserted patents do not come close to preempting all social networking methods³, as the use of these processes leads to a “specific [and] discrete implementation” and a “particular arrangement of elements [that] is an improvement over prior art”. See *BASCOM Global Internet Servs., Inc., v. AT&T Mobility LLC*, 827 F.3d 1341, 1350 (Fed. Cir. 2016) (“Nor do the claims preempt all ways of filtering content on the Internet; rather, they recite a specific, discrete implementation of the abstract idea of filtering content. Filtering content on the Internet was already a known concept, and the patent describes how its particular arrangement of elements is a technical improvement over prior art ways of filtering such content.”).

³ A Google Patents search for patents containing “social network” in their titles yields over 10,000 patents and patent applications, underscoring that the asserted patents are far from capturing the purportedly abstract idea of matchmaking or otherwise preempting the field. [https://patents.google.com/?q=TI%3d\(%22social+network%22\)](https://patents.google.com/?q=TI%3d(%22social+network%22)). Twenty-four patents and patent applications cite the ‘875 patent as prior art, further supporting the absence of preemption.

The ‘875 patent specification provides a stepwise algorithm for discovering devices under the claimed invention

The ‘875 patent specification articulates a stepwise process that is clear, understandable, and does not attempt to cover all available methods of social networking, much less future secure, authenticated methods.

In one example, in a ***first step*** of the discovery process, a user scans the Surrounding area covered by Bluetooth short range wireless signal, and obtains all Bluetooth addresses of members in the area. In the ***second step***, the server associates all or some of these Bluetooth addresses with member profiles in the data base (each of which may contain the information described in FIG. 2) and provides the requesting user conducting the discovery with the results of the discovery in the form of personal attributes of nearby members including their pictures and names, which may be a social card for each of the members of the service. ***If a device address is not associated with a member of the service***, the Server will report to the user conducting the discovery that the address as “Unknown or provide generic information such as the device class or device name per Bluetooth standards.” (APPX117.)

Stepwise discovery of devices is expanded into four steps and discussed in more detail through the following passages of the ‘875 patent. (APPX117-118.) Note that the system checks the hardware identifier, discussed above, and potentially rejects or excludes devices from the pool of potential user contacts, thus furthering the goal of providing secure, authenticated communications. (APPX117.)

Static or dynamic location data is used on top of the secure communication achieved using unique hardware identifiers and credentials-based authentication

The '352 patent builds on the improvements over the art discussed above and adds the notion of employing static and dynamic location data. That is, claim 1 of the '352 patent does not merely connect users based on location, as the district court concluded. but combines a) the use of unique hardware identifier-based discovery, b) credentials-based authentication, and c) layers on the use of static or dynamic location data, all for the purpose of ensuring secure, authenticated communication among users in the desired proximity from each other. Dependent claim 16 adds that the discovery process can occur even if a user's device is off, as the claimed invention employs static or dynamic location data and allows a user to be included in a discovery search result, regardless, based on the stored/static location information.

The computing device may be configured to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location. The updated location indicators may be based on user location information reported to the computing device by any of mobile device real time location reporting technology and internet protocol address location information and saved to profiles of users. ***The computing device may permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by the first user***, and the computing device may permit the discoverable members to have their respective devices unconnected to an internet connection service at the time of the search being conducted by the first user, wherein any of turned off devices and disconnected devices may be discoverable by the computer device

as the internet connection service is configured to report the any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to the first user. (APPX134.)

As such, claim 16 of the ‘352 patent and independent claims 1 of the ‘267 patent and the ‘397 patent all contain the additional limitation that a user with a device that is off can still be included in a discovery search based on stored location data. (APPX134, APPX155, APPX187.) This element further avoids preempting the field and adds further inventive concepts that support that the claimed inventions frame patent eligible subject matter.

SUMMARY OF ARGUMENT

The district court erred in finding that the asserted patents are directed to the abstract idea of social networking. While the claimed methods and systems involve and are used in social networking, the claims, themselves, incorporate multiple technological improvements and are thus not directed to an abstract idea. Instead, the methods and systems are directed to a specific application of this concept and resulting patent eligible subject matter. As the Supreme Court has recognized in analogous circumstances, “an application of a law of nature or mathematical formula to a known structure or process may well be deserving of patent protection.” *Diamond v. Diehr*, 450 U.S. 175, 187 (1981).

Here, the district court first erred in concluding that the inventions described and claimed in the four asserted patents are directed to abstract ideas under *Alice* step one and are thus ineligible subject matter under 35 U.S.C. § 101. Second, the court erred in identifying and then applying a purportedly representative claim that lacked material technological improvements set forth on other asserted claims. And, third, erred in finding that the detailed technical improvements were not inventive concepts sufficient for *Alice* step two.

STANDARD OF REVIEW

This Court reviews a district court dismissal for failure to state a claim under the law of the regional circuit. *In re Bill of Lading Transmission & Processing Sys. Patent Litig.*, 681 F.3d 1323, 1331 (Fed. Cir. 2012). The Third Circuit reviews challenges to a dismissal for failure to state a claim under FRCP 12(b)(6) *de novo*, taking the allegations of the complaint to be true. *See Newark Cab Ass’n v. City of Newark*, 901 F.3d 146, 151 (3d Cir. 2018); *Davis v. Wells Fargo*, 824 F.3d 333, 346 (3d Cir. 2016). This Court thus reviews a district court’s determination of patent-eligibility under § 101 *de novo*. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1255 (Fed. Cir. 2014).

ARGUMENT

There is a two-part test for determining whether a claimed invention is directed to an abstract idea and, even if so, contains sufficient inventive concepts to warrant patent protection. *Alice Corp. v. CLS Bank Int'l*, 134 S.Ct. 2347, 2355 (2014); *Mayo v. Prometheus*, 132 S.Ct. 1289, 1297-98 (2012). The first part of the *Alice* test is to determine whether the claims are directed to an abstract idea, a law of nature or a natural phenomenon (*i.e.*, a judicial exception). *Id.* If the claims are directed to a judicial exception, the second part of the *Alice* test is to determine whether the claim recites additional elements that amount to significantly more than the judicial exception. *Id.* citing *Mayo*, 566 U.S. at 72-73.

We address the first part of the *Alice* test in Section I.

We address the second part of the *Alice* test in Section II.

I. ALICE STEP ONE: WIRELESS DISCOVERY’S INVENTIONS RECITE AND CLAIM PATENT ELLIGIBLE SUBJECT MATTER AND NOT MERE ABSTRACT IDEAS.

A. The district court misapplied *Alice* Step One.

The district court misapplied the two-part test the Supreme Court articulated in *Alice*. As to the first prong, the district court erred in concluding that the present claims were analogous in scope and content with the patents at issue in *NetSoc, LLC v. Match Grp., LLC*, 838 F. App'x 544, 548 (Fed. Cir. 2020) (rejecting patents directed to “the abstract idea of automating the conventional establishment of social networks to allow humans to exchange information and form relationships”),

Jedi Techs., Inc. v. Spark Networks, Inc., No. 16-1055-GMS, 2017 WL 3315279, at *7 (D. Del. Aug. 3, 2017) (rejecting patents directed to “the idea ‘of matching people based on criteria such as personality traits or location’”), *Walker Digit., LLC v. Google, Inc.*, 66 F. Supp. 3d 501,508 (D. Del. 2014) (rejecting patents directed to “the basic concept of controlled exchange of information about people as historically practiced by matchmakers and headhunters”), and *Perry St. Software, Inc. v. Jedi Techs., Inc.*, 548 F. Supp. 3d 418,433 (S.D.N.Y. 2021) (rejecting patents directed to “[m]atching based on geographic location”). (APPX069, APPX089.)

The patents at issue in those cases did not involve hardware-identifier based registration of users, allowing connection between potentially incompatible devices. They did not involve the additional use of credentials-based authentication. And they did not involve the layering of location data on top of those processes to allow finer identification of potential connections to make, even when a user’s device is turned off.

B. The district court glossed over an array of significant technical improvements.

Rather than focusing on these technical aspects of the claimed inventions and the actual claim language, the district “distilled”⁴ the claim limitations down to abstract blurbs, rendering it straightforward to conclude that the inventions are directed to abstract ideas.

For example, claim 10 of the ‘875 patent can be distilled down to the following seven steps: (1) “providing ‘user profile information’ about two users of ‘mobile communications devices,’” (2) “receiving ‘indications’ of the devices’ locations,” (3) “receiving ‘identifiers’ of all devices on a ‘social network,’” (4) “sending one user’s ‘invitation’ to exchange information with another user,” (5) “connecting users for ‘personal communication,’” (6) “transmitting information from one user’s ‘social network file’ to the other user’s device,” and (7) “disclosing ‘social network attributes’ of users who are ‘in the vicinity of or within a particular distance from’ each other.” (APPX069, APPX089.)

This purported distillation destroys much of the technical detail in that claim. For example, in distilled step 3, the court has removed the concept and function of the “unique hardware identifier” in allowing discovery of potentially incompatible devices and tracking users with such identifiers. *See JDS Techs., Inc. v. Exacq Techs., Inc.*, No. 2:15-cv-10387, Op. at 12–14 (E.D. Mich. June 7, 2016) (denying motion to dismiss on the basis of ineligibility of asserted video surveillance patent claims; holding that the claims were not directed to an abstract idea, as “querying

⁴ The district court, similarly, distilled the claim elements of the other three asserted patents, with the same result of ignoring the purpose and use of the “unique hardware identifiers” and the credentials-based “authentication” process.

external camera devices to extract an *embedded unique identifier*” is a “technical solution . . . inexorably tied to computer technology”).

The distilled term lacks altogether any mention of the credentials-based authentication process, and the result is that the term authentication does not even appear in the order, except in the court’s initial recitation of claim 10. *See Cosmokey Solutions GMBH & Co. KG v. Duo Security LLC*, No. 20-2043, Op. at 11 (Fed. Cir. Oct. 4, 2021) (reversing district court finding ineligible a claimed method of authentication; “We disagree with the district court’s analysis and conclusion. The ’903 patent claims and specification recite a specific improvement to authentication that increases security, prevents unauthorized access by a third party, is easily implemented, and can advantageously be carried out with mobile devices of low complexity.”). In the four asserted patents, the authentication process increases security, prevents unauthorized access, and is easily implemented. If Wireless Discovery was relying entirely on the authentication process alone, it may be required to show more detail as to its authentication process, but, here, authentication is just one part of the claimed methods and systems, the ordered combination of which is eligible subject matter.

Likewise, distilled connecting step 5 removes the array of device-independent communication options for the users’ “mobile communications devices” available through the gateway or server (“computing device”), as set forth

in the actual step 5 (“connecting, *via the computing device*, the first user and the second user *through the computing device* for personal communication between first user and the second user, the personal communication *comprising one or more SMS, E-mail, chat/instant messaging, multimedia, voice or video*”)

(APPX063, APPX083-84.) In other words, incompatible devices circa-2008 that could not communicate with each other natively may be able to communicate through a server or gateway. This is how WhatsApp more recently has allowed iOS and Android devices to communicate better than native iMessage, which often drops Android texts. Such cross-platform technology is common now, was not common in 2008, and is simply not discussed in the district court’s analysis of the purportedly distilled claim elements. *See MAZ Encryption Techs. LLC v.*

Blackberry Corp., No. 1:13-cv-00304, Op. at 12 (D. Del. Sep. 29, 2016) (denying motion for judgment on the pleadings that the asserted document encryption patent claims were ineligible; holding that the claims were not directed to an abstract idea and were instead directed to a solution to the *incompatibility* of encryption systems with EDMS systems).

The district court’s result-oriented analysis does not do justice to the claimed inventions. The district court then characterizes these distilled steps as mere “data-processing steps” that were rejected in *NetSoc*, which, as mentioned above, lack

any of the technical processes the current claims embrace, focusing solely on the method of connecting users with similar interests.

This Court dealt with a similar situation in *BASCOM Global Internet Servs., Inc., v. AT&T Mobility LLC*, 827 F.3d 1341 (Fed. Cir. 2016) (reversing district court’s dismissal of patent in which individual computer-implemented claim elements were not new or patentable but finding that the “ordered combination of limitations” was eligible). This passage describes the nature of the *BASCOM* district court’s divergence from the correct path and this Court’s thoughtful explanation of why it was reversing the finding of ineligible subject matter.

The district court looked at each limitation individually and noted that the limitations “local client computer,” “remote ISP server,” “Internet computer network,” and “controlled access network accounts” are described in the specification as well-known generic computer components.... The district court also noted that a filtering system is described in the specification as “any type of code which may be executed” along with database entries. ... The district court then looked at the limitations collectively, and held that “[f]iltering software, apparently composed of filtering schemes and filtering elements, was well known in the prior art,” and “using ISP servers to filter content was well-known to practitioners.” ... The district court thus concluded that BASCOM had not asserted adequately that the claims disclose an inventive concept because the limitations, “considered individually, or as an ordered combination, are no more than routine additional steps involving generic computer components and the Internet, which interact in well-known ways to accomplish the abstract idea of filtering Internet content.” *Id.* at 655.

The *BASCOM* court first acknowledged that the inventors had not invented the individual components and did not claim to have done so.

We agree with the district court that the limitations of the claims, taken individually, recite generic computer network and Internet components, none of which is inventive by itself. BASCOM does not assert that it invented local computers, ISP servers, networks, network accounts, or filtering. Nor does the specification describe those elements as inventive.

The *BASCOM* court next acknowledged that such existing components may be generic computer components from an *Alice* perspective.

However, we disagree with the district court's analysis of the ordered combination of limitations. In light of *Mayo* and *Alice*, it is of course now standard for a § 101 inquiry to consider whether various claim elements simply recite "well-understood, routine, conventional activit[ies]." *Alice*, 134 S. Ct. at 2359. The district court's analysis in this case, however, ***looks similar to an obviousness analysis under 35 U.S.C. § 103***, except lacking an explanation of a reason to combine the limitations as claimed. The inventive concept inquiry requires more than recognizing that each claim element, by itself, was known in the art. ***As is the case here, an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces.***

The *BASCOM* court then disagreed entirely with the district court that the import of the inventors employing known components was that their use, in combination, was necessarily patent ineligible.

The inventive concept described and claimed in the '606 patent is the installation of a filtering tool at a specific location, remote from the end-users, with customizable filtering features specific to each end user. This design gives the filtering tool both the benefits of a filter on a local computer and the benefits of a filter on the ISP server. ***BASCOM explains that the inventive concept rests on taking advantage of the ability of at least some ISPs to identify individual accounts that communicate with the ISP server, and to associate a request for Internet content with a specific individual account.*** '606

patent at 4:35–38 (“FIG. 3 shows the ISP server 100 process for accepting a log-in request 200, the ISP server 100 first verifies 201 whether the user is a registered subscriber.”); *id.* at 5:60–62 (“In the TCP/IP protocol, each Internet access request or ‘packet’ includes the [website] from which content is requested.”); Oral Argument, 17:30–17:50 (counsel for BASCOM agreeing that the ISP server is able to associate individual accounts with website requests because, “due to the TCP/IP protocol, the server is able to recognize the address of the particular user”). ***According to BASCOM, the inventive concept harnesses this technical feature of network technology in a filtering system by associating individual accounts with their own filtering scheme and elements while locating the filtering system on an ISP server. See Research Corp. Techs. v. Microsoft Corp.***, 627 F.3d 859, 869 (Fed. Cir. 2010) (“[I]nventions with specific applications or improvements to technologies in the marketplace are not likely to be so abstract that they override the statutory language and framework of the Patent Act.”). On this limited record, this specific method of filtering Internet content cannot be said, as a matter of law, to have been conventional or generic.

The *BASCOM* court was impressed by and ultimately found dispositive that the inventive concept at issue was associating individual accounts and their addresses and thus with their own filtering criteria. This is precisely how the four asserted patents, here, operate in various disclosed embodiments – that is, they rely on hardware identifier-based device registration, plus credentials-based authentication, plus user preference-based filtering of potential contacts, plus static or dynamic location based filtering.

The claims do not merely recite the abstract idea of filtering content along with the requirement to perform it on the Internet, or to perform it on a set of generic computer components. Such claims would not contain an inventive concept. *See CyberSource Corp. v. Retail Decisions, Inc.*, 654 F.3d 1366, 1370 (Fed. Cir. 2011) (reasoning that the use of the Internet to verify a credit card

transaction does not meaningfully add to the abstract idea of verifying the transaction). ***Nor do the claims preempt all ways of filtering content on the Internet; rather, they recite a specific, discrete implementation of the abstract idea of filtering content.*** Filtering content on the Internet was already a known concept, and the patent describes how its particular arrangement of elements is a technical improvement over prior art ways of filtering such content. As explained earlier, prior art filters were either susceptible to hacking and dependent on local hardware and software, or confined to an inflexible onesize-fits-all scheme. BASCOM asserts that the inventors recognized there could be a filter implementation versatile enough that it could be adapted to many different location. Thus, construed in favor of the nonmovant BASCOM—the claims are “more than a drafting effort designed to monopolize the [abstract idea].” *Alice*, 134 S. Ct. at 2357. ***Instead, the claims may be read to “improve[] an existing technological process.”*** *Id.* at 2358 (discussing the claims in *Diehr*, 450 U.S. 175). *BASCOM*, 372 F.3d at 1351 (emphasis added).

Comparisons to the district court’s analytical process and erroneous conclusions are obvious. The district court, here, distilled the claim elements to such abstraction that they seemingly conflated with the abstract ideas themselves. That led the court onto a path that could not lead to the correct result. Examining the overall claims of the four patents at issue, there are significant technological differences among the claims, yet the court framed its inquiry around one claim, abstracting the elements to short blurbs or sound bites, thus losing all technical detail and depth along the way. Finding that the individual elements were not new, while perhaps interesting academically, missed the import and inventive concept of the ordered combination.

As in *BASCOM*, the inventive concept before the court “harnesses a technical feature of network technology” (“unique hardware identifiers”) to associate its users with specific user accounts and preferences. This relies on the unique hardware identifiers that each phone or other device has for its provider network to recognize and authorize a device. Also as in *BASCOM*, linking that identifier with the user account allows second-layer credentials-based authentication, ensuring that only that information to which a particular user should have access is, in fact, is accessible. This enhances overall system security and also allows one to customize his or her experience on the system. Further, as in *BASCOM*, the claims at issue will not preempt other social networking platforms, as the patents claim specific systems and methods for this form of secure, authenticated, device-independent networking. The present inventions also teach a discovery process through which the system is performing background location-based identification of potential persons to meet, filtering based on proximity, using static or dynamic location data.

By ignoring the technical processes and improvements over the core or abstract process of social networking, the district court erred in its application of *Alice* step one. The claims of the four asserted patents are not directed to abstract ideas; they are directed to technical solutions to problems that existed circa-2008,

some of which persist even today, as manifested in iOS and Android device incompatibilities.

C. The district court misapplied what is required to demonstrate an algorithm.

The district court also erred in concluding that the four asserted patents lack sufficient rules or an algorithm, thus buttressing the court’s view that those claims are directed to an abstract idea. (APPX072, APPX090, (“none of the representative claims recite any rules or algorithms for improving a telecommunications network”)). For a patent specification to be deficient, it must be devoid of an “algorithm” for performing functions associated with the limitation. *Noah Sys. Inc. v. Intuit Inc.*, 675 F.3d 1302, 1312 (Fed. Cir. 2012). This “algorithm” requirement is quite flexible in form – the algorithm can be provided in many ways, in any understandable terms, such *as a mathematical formula, in prose, as a flow chart, drawings, or in any other manner that provides sufficient structure. Id.* (emphasis added). While invalidity is a question of law, *IGT v. Bally Gaming Int’l, Inc.*, 659 F.3d 1109, 1119 (Fed. Cir. 2011), it must be based on a factual determination of what one skilled in the art would have understood by looking at the patent, *Intel Corp. v. VIA Techs., Inc.*, 319 F.3d 1357, 1365-66 (Fed. Cir. 2003). A patent and each of its claims are presumed valid, 35 U.S.C. § 282(a), and this presumption is overcome only by clear and convincing evidence of invalidity. *Microsoft Corp. v. i4i Ltd. P’ship*, 564 U.S. 91 (2011).

Here, the patent specifications include a stepwise recitation of the discovery process and depicts in Figures 5 and 6 an application of that process. (APPX117-18.) This combination of supporting disclosures mirrors the algorithm requirements described above and renders this issue moot, as well.

D. The district court ignored the nuance here by mistakenly declaring a single claim “representative”.

Although representative claims are often used in *Alice* analysis, the representative claim must in fact be representative. Here, the district court’s distillation of claim elements into abstract blurbs has destroyed numerous claim limitations, as discussed above. As such, the resulting claim assessment does not represent a fair analysis of the claim elements themselves, particularly as to the importance of the unique hardware identifiers in allowing potentially incompatible mobile devices to communicate through a computing device, the use of credentials-based authentication, which was not discussed at all, or the ability to discover mobile devices that are turned off based on static or dynamic location data. The purportedly representative claims are thus not fairly representative of the full claim sets in the four asserted patents. *See TriPlay Inc. v. WhatsApp Inc.*, No. 1:13-cv-01703, Slip Op. at 12 (D. Del. Apr. 28, 2015) (denying motion to dismiss for lack of patentable subjected matter as to all but one of the claims of messaging system patent because the defendant “provided little analysis as to whether” two allegedly representative claims were in fact representative of the remaining claims

and because there were “real differences among the claims.”); *Cronos Techs., LLC v. Expedia Inc.*, No. 13-1538, -1541, -1544, Op. at 5 (D. Del. Sept. 8, 2015) (denying motion for judgment on the pleadings because defendants had not adequately articulated why each dependent claim relates to the same abstract idea or why they fail to supply inventive concept).

Wireless Discovery raised these issues below and contested whether the purportedly representative claims were fairly representative. *See Eagle View Techs., Inc. v. Xactware Solutions, Inc.*, No. 1:15-cv-07025, Op. at 6 (D.N.J. Aug. 2, 2016) (denying without prejudice motion to dismiss on the ground that the asserted aerial roof measurement patent claims were ineligible, given disputes over the construction of certain claim terms and representative claims); *Pragmatus Telecom LLC v. Genesys Telecommunications Labs., Inc.*, No. 1-14-cv-00026, at 9-10, 12, 14-17 (D. Del. July 9, 2015) (finding that it was “inappropriate to invalidate all four patents under” Section 101 “merely because . . . the eight claims” may be “representative”). The district court overrode those concerns and reasoned that the additional elements to which Wireless Discovery pointed were immaterial, another basis for reversal. (APPX067, APPX085.)

II. *ALICE* STEP TWO: WIRELESS DISCOVERY’S INVENTIONS RECITE AN IMPROVEMENT OF AN EXISTING TECHNOLOGICAL PROCESS.

If a court finds that the claims are directed to abstract ideas, step two of *Alice* requires determining whether there are sufficient inventive concepts to transform the abstract ideas into eligible inventions. *Alice*, 134 S.Ct. at 2355. The focus is on whether the claims recite an “improvement of an existing technological process.” *Alice*, 134 S. Ct. at 1358 (quoting *Mayo*, 132 S. Ct. at 1299) (discussing *Diamond v. Diehr*, 450 U.S. 175 (1981)). Such is the case with the claims of the four asserted patents.

A. Wireless Discovery’s ordered combination of limitations is inventive and protectable.

Having abstracted and distilled the claims at issue into a short laundry list of gerunds, it is not surprising that the district court did not find an inventive concept. In the two and one half pages afforded to step two analysis, the district court reasoned that that there is “no saving inventive concept in any of the representative claims.” (APPX073-APPX091.) It relied on the premise that Wireless Discovery used a “generic computer”, which of course, itself, ignores that the distillation of claim elements destroyed the very technological elements the court then found lacking. This Court’s reversal in *BASCOM* is instructive and directly analogous – “the inventive concept harnesses this technical feature of network technology in a filtering system by associating individual accounts with their own filtering scheme

and elements while locating the filtering system on an ISP server.” *BASCOM*, 827 F.3d at 1350. As set forth in the *BASCOM* excerpt above, the “technical feature” on which the court focused was the use of network addresses to determine the geographic source of web content and then leveraging such addresses in “associating individual accounts with their own filtering schemes.” *Id.* Here, the claimed inventions employ “unique hardware identifiers,” ties each identifier to an individual user devices, thus “associate[ing] individual accounts,” each of which accounts contains that user’s filtering criteria, as shown in the sample record in Figure 2 and the application of such criteria in Figures 5 and 6.⁵ Going beyond what the *BASCOM* court required, the present claims also require credentials-based authentication and the use of location data to further secure and refine the overall claimed methods and systems.” This sequential process is what the *BASCOM* court

⁵ As the *BASCOM* court noted with respect to focusing on precise claim limitations under *Alice*, some inventions, when dissected and broken down, are plainly not directed to an abstract idea under step one, while others, perhaps more combinatorial inventions, require a focus on the claim language in step two.

This case ... presents a “close call[] about how to characterize what the claims are directed to.” *See id.* at *8. The Enfish claims, understood in light of their specific limitations, were unambiguously directed to an improvement in computer capabilities. *See id.* at *5. Here, in contrast, the claims and their specific limitations do not readily lend themselves to a step-one finding that they are directed to a nonabstract idea. We therefore defer our consideration of the specific claim limitations’ narrowing effect for step two.

BASCOM, 827 F.3d at 1349.

described as an “ordered combination of limitations” that is inventive and protectable. *Id.*

In another analogous cases, this Court focused on whether the claimed invention overcame problems in the relevant field or presented technological improvements over existing methods in that field. *See DDR Holdings, LLC v. Hotels.com, L.P.*, 773 F.3d 1245, 1256 (Fed. Cir. 2014) (affirming denial of judgment on the pleadings because claimed invention was “necessarily rooted in computer technology in order to overcome a problem specifically rising in the realm of computer networks,” and overrode the “routine and conventional sequence of events ordinarily triggered by the click of a hyperlink”); *McRO, Inc. v. Bandai Namco Games America Inc.*, 837 F.3d 1299, 1316 (Fed. Cir. 2016) (reversing judgment on the pleadings because claims were “directed to a patentable, technological improvement over the existing, manual 3-D animation techniques” and therefore were “not directed to an abstract idea”); *Amdocs (Israel) Ltd. v. Openet Telecom, Inc.*, 841 F.3d 1288, 1300-1302 (Fed. Cir. 2016) (reversing summary judgment because claims directed to correlating network accounting records and other usage information were eligible, even if directed to an abstract idea, because they provided unconventional solutions to technological problems and provided advantages over the prior art); *Thales Visionix Inc. v. United States*, 850 F.3d 1343, 1349 (Fed. Cir. 2017) (reversing judgment on the

pleadings because claims “specif[ied] a particular configuration of inertial sensors and a particular method of using the raw data from the sensors in order to more accurately calculate the position and orientation of an object on a moving platform”); *SRI Int’l Inc. v. Cisco Sys. Inc.*, No.1:13-cv-01534, Op. at 12-13 (D. Del. Apr. 11, 2016) (denying motion for summary judgment because claims were not directed toward an abstract idea; the “patents address the vulnerability of computer networks’ ‘interoperability and sophisticated integration of technology’ to attack”). Under this litany of cases, the claimed inventions in the four asserted patents meet and exceed the requirements of *Alice* step two.

B. The district court’s reasoning under *Alice* step two rests on two erroneous assumptions.

The District Court’s reasoning under *Alice* step two rests on two erroneous assumptions. First, in addition to its erroneous distillation of the asserted claim elements in a way that obliterated the technological features, the district court also complains that Wireless Discovery cites to portions of the specification as support for the presence of inventive concepts, rather than language in the claims. “Tellingly, Wireless Discovery only cites to the specification in its brief, not to the claims, to support its bare assertions that the asserted patents recite an inventive concept.” (APPX074, APPX092.) This is simply incorrect.

It is, of course, appropriate and typical for a patentee to cite to the specification for support. And, as shown above, the claims, themselves, explicitly

require 1) linking each user device with a unique identifier, 2) layering credentials-based user authentication on top, and 3) further applying user location data and user filtering preferences, all in an “ordered combination of limitations” that provide solutions to “problems” in the field of social networking, which are improvements to the relevant technology. As such, the district court’s reliance on *Wireless Discovery* citing to the patent specification is unpersuasive, as the claims explicitly include the improvements and present them as an “ordered combination” that narrows the claims and avoids preemption concerns.

Second, the district court concluded that the inventions at issue were “quintessential ‘apply it with a computer’ claims,” reasoning that the claims’ incorporation of known computer components was fatal under step two. (APPX075, APPX093.) This is also incorrect. As the *BASCOM* court explained in reversing a district court applying a similar analysis, “*BASCOM* does not assert that it invented local computers, ISP servers, networks, network accounts, or filtering,” but, nevertheless, “an inventive concept can be found in the non-conventional and non-generic arrangement of known, conventional pieces.” *Id.* Likewise, here, the court should recognize that the “ordered combination” of linking a user device to a unique identifier, requiring credentials-based authentication, and filtering available users based on location data and user preferences, is more than sufficient inventive conception to satisfy *Alice* step two.

CONCLUSION

For the above reasons, we urge the Court to reverse the district court judgment.

May 26, 2023

Respectfully submitted,

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ADDENDUM

1. Memorandum Order entered February 6, 2023 in
Case No. 1:22-cv-00480 GBW.....APPX054-076
2. Memorandum Order entered February 6, 2023 in
Case No. 1:22-cv-00478 GBW.....APPX077-094
3. US Patent No. 9,264,875.....APPX095-121
4. US Patent No. 9,357,352.....APPX122-142
5. US Patent No. 10,321,267.....APPX143-162
6. US Patent No. 10,334,397.....APPX163-188

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

WIRELESS DISCOVERY LLC,

Plaintiff,

v.

EHARMONY, INC.,

Defendant.

C.A. No. 22-480-GBW

WIRELESS DISCOVERY LLC,

Plaintiff,

v.

THE MEET GROUP, INC.,

Defendant.

C.A. No. 22-484-GBW

MEMORANDUM ORDER

Presently before this Court is Defendant eHarmony, Inc.’s (“eHarmony”) and Defendant The Meet Group, Inc.’s (“The Meet Group”) Motions to Dismiss for Failure to State a Claim under Federal Rule of Civil Procedure 12(b)(6). C.A. No. 22-480, D.I. 30; C.A. No. 22-484, D.I. 12. The Court has reviewed the parties’ briefing, No. 22-480, D.I. 31, D.I. 39, D.I. 40; No. 22-484,

D.I. 13, D.I. 20, D.I. 23,¹ and heard oral argument on December 14, 2022.² (“Tr. __”). For the reasons below, the Court GRANTS-IN-PART and DENIES-IN-PART eHarmony’s Motion to Dismiss, No. 22-480, D.I. 30, and GRANTS The Meet Group’s Motion to Dismiss, No. 22-484, D.I. 12.

I. BACKGROUND

On April 13, 2022, Plaintiff Wireless Discovery LLC (“Wireless Discovery”) sued eHarmony and The Meet Group in separate patent infringement cases asserting infringement of U.S. Patent No. 9,264,875 (“the ’875 patent”). No. 22-480, D.I. 1; No. 22-484, D.I. 1. Wireless Discovery amended its complaint in the eHarmony case on July 18, 2022, asserting three additional patents: U.S. Patent Nos. 9,357,352 (the “’352 patent”), 10,321,267 (the “’267 patent”), and 10,334,397 (the “’397 patent”). No. 22-480, D.I. 21.

The asserted patents are all from the same patent family and are continuations-in-part of U.S. Patent No. 8,914,024, which is not asserted in either case. The asserted patents all relate generally to the idea of social networking, i.e., discovering members of the same social network

¹ The parties also filed letter briefs identifying which U.S. Supreme Court or Federal Circuit case(s) they contend is most similar to the patent(s)-at issue. No. 22-480, D.I. 48, D.I. 49; No. 22-484, D.I. 38, D.I. 39.

² The Court also heard oral argument on Defendant Coffee Meets Bagel, Inc.’s, Defendant Down App, Inc.’s, Defendant Grinder, Inc.’s, and Defendant Hily Corp.’s Motion to Dismiss in *Wireless Discovery LLC v. Coffee Meets Bagel, Inc.*, No. 22-478, *Wireless Discovery LLC v. Down App, Inc.*, No. 22-479, *Wireless Discovery LLC v. Grindr, Inc.*, No. 22-481, and *Wireless Discovery LLC v. Hily Corp.*, No. 22-482. C.A. No. 22-478, D.I. 24; C.A. No. 22-479, D.I. 25; C.A. No. 22-481, D.I. 27; C.A. No. 22-482, D.I. 25. The Court issued a similar but separate opinion in those cases. The Court similarly finds in those cases that the asserted patents are not patent eligible under 35 U.S.C. § 101.

in the same vicinity and exchanging member's personal information. *See* No. 22-480, D.I. 21-5 at 1:16-22 ("The invention relates to discovering members of a social network by associating their personal attributes to the mobile device for the purpose of exchanging information using mobile communication devices and, in particular, exchanging personal information between one or more mobile communication devices."); No. 22-484, D.I. 1-3 at 1:16-22 (same).

Individuals can "use their mobile phones to discover others by personal attributes, such as by photos and names, after which, the two parties can exchange information over the internet." No. 22-480, D.I. 21-5 at 2:4-7; No. 22-484, D.I. 1-3 at 2:4-7. These individuals can discover other members who are located "within a vicinity." No. 22-480, D.I. 21-5 at 4:4-6; No. 22-484, D.I. 1-3 at 4:4-6. The "vicinity" is determined by a location that was reported to the server, in the geographic area specified by a user's "search criteria," or by a location recorded in a database. No. 22-480, D.I. 21-5 at 5:4-15; No. 22-484, D.I. 1-3 at 5:4-15.

Individuals can send "invitations" to other members in the vicinity. No. 22-480, D.I. 21-5 at 5:14-22; No. 22-484, D.I. 1-3 at 5:14-22. "The invitation may take the form of a social card, VCard, or other manner of engaging another person in a social atmosphere, or even a business setting such as a meeting, trade show, conference, etc." No. 22-480, D.I. 21-5 at 5:18-22; No. 22-484, D.I. 1-3 at 5:18-22. If a user accepts the "invitation," "members can elect to exchange or send personalized, intimate contact information over the internet after the users have discovered each other." No. 22-480, D.I. 21-5 at 4:10-12; No. 22-484, D.I. 1-3 at 4:10-12. The invention "provides a system and method that enables free discovery of others who also desire social interaction, but without being constrained by hardware compatibility issues inherent in mobile devices by different manufacturers." No. 22-480, D.I. 21-5 at 2:20-24; No. 22-484, D.I. 1-3 at 2:20-24.

II. LEGAL STANDARD

a. Motion to Dismiss Under Rule 12(b)(6)

To state a claim on which relief can be granted, a complaint must contain “a short and plain statement of the claim showing that the pleader is entitled to relief . . .” Fed. R. Civ. P. 8(a)(2). Such a claim must plausibly suggest “facts sufficient to ‘draw the reasonable inference that the defendant is liable for the misconduct alleged.’” *Doe v. Princeton Univ.*, 30 F.4th 335, 342 (3d Cir. 2022) (quoting *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009)) (citing *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 557 (2007)). “A claim is facially plausible ‘when the plaintiff pleads factual content that allows the court to draw the reasonable inference that the defendant is liable for the misconduct alleged.’” *Klotz v. Celentano Stadtmauer & Walentowicz LLP*, 991 F.3d 458, 462 (3d Cir. 2021) (quoting *Iqbal*, 556 U.S. at 678). But the Court will “‘disregard legal conclusions and recitals of the elements of a cause of action supported by mere conclusory statements.’” *Princeton Univ.*, 30 F.4th at 342 (quoting *Davis v. Wells Fargo*, 824 F.3d 333, 341 (3d Cir. 2016)). Under Rule 12(b)(6), the Court must accept as true all factual allegations in the Complaint and view those facts in the light most favorable to the plaintiff. *See Fed. Trade Comm’n v. AbbVie Inc.*, 976 F.3d 327, 351 (3d Cir. 2020).

b. Collateral Estoppel

Collateral estoppel (i.e., issue preclusion) precludes parties from relitigating an issue that they previously had a full and fair opportunity to litigate. *See Montana v. United States*, 440 U.S. 147, 153 (1979). Regional circuit law governs the general procedural question of whether collateral estoppel applies. *See ArcelorMittal Atlantique et Lorraine v. AK Steel Corp.*, 908 F.3d 1267, 1274 (Fed. Cir. 2018). “However, for any aspects that may have special or unique

application to patent cases, Federal Circuit precedent is applicable.” *Aspex Eyewear, Inc. v. Zenni Optical Inc.*, 713 F.3d 1377, 1380 (Fed. Cir. 2013) (citation omitted).

Under Third Circuit law, collateral estoppel applies when “(1) the identical issue [was] previously adjudicated; (2) the issue [was] actually litigated; (3) the previous determination of the issue [was] necessary to the decision; and (4) the party being precluded from relitigating the issue [was] fully represented in the prior action.” *Stone v. Johnson*, 608 F. App’x 126, 127 (3d Cir. 2015); *see also Jean Alexander Cosmetics, Inc. v. L’Oreal USA, Inc.*, 458 F.3d 244, 249 (3d Cir. 2006). “The party seeking to effectuate an estoppel has the burden of demonstrating the propriety of its application.” *Suppan v. Dadonna*, 203 F.3d 228, 233 (3d Cir. 2000).

c. Attorney Fees

Under 35 U.S.C. § 285, “[t]he court in exceptional cases may award reasonable attorney fees to the prevailing party.” An “exceptional” case under § 285 is “one that stands out from others with respect to the substantive strength of a party’s litigating position (considering both the governing law and the facts of the case) or the unreasonable manner in which the case was litigated.” *Octane Fitness, LLC v. ICON Health & Fitness, Inc.*, 572 U.S. 545, 554 (2014). “The party seeking fees must prove that the case is exceptional by a preponderance of the evidence, and the district court makes the exceptional-case determination on a case-by-case basis considering the totality of the circumstances.” *Energy Heating, LLC v. Heat On-The-Fly, LLC*, 15 F.4th 1378, 1382 (Fed. Cir. 2021), *cert. denied*, 142 S. Ct. 1367 (2022) (citation omitted). “[A] case presenting either subjective bad faith or exceptionally meritless claims may sufficiently set itself apart from mine-run cases to warrant a fee award.” *Octane Fitness*, 572 U.S. at 555.

d. Patent Eligible Subject Matter

Patentability under 35 U.S.C. § 101 is a threshold legal issue. *Bilski v. Kappos*, 561 U.S. 593, 602 (2010). Section 101 inquiry is properly raised at the pleading stage if it is apparent from the face of the patent that the asserted claims are not directed to eligible subject matter. *Cleveland Clinic Found. v. True Health Diagnostics LLC*, 859 F.3d 1352, 1360 (Fed. Cir. 2017), *cert. denied*, 138 S. Ct. 2621 (2018); *see also SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1166 (Fed. Cir. 2018) (stating that patent eligibility “may be, and frequently has been, resolved on a Rule 12(b)(6) or (c) motion”); *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1097 (Fed. Cir. 2016) (stating that “it is possible and proper to determine patent eligibility under 35 U.S.C. § 101 on a Rule 12(b)(6) motion” (quoting *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1373–74 (Fed. Cir. 2016))); *Voter Verified, Inc. v. Election Sys. & Software LLC*, 887 F.3d 1376, 1379 (Fed. Cir. 2018) (affirming Rule 12(b)(6) dismissal based on § 101 patent ineligibility). This is, however, appropriate “only when there are no factual allegations that, taken as true, prevent resolving the eligibility question as a matter of law.” *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1128 (Fed. Cir. 2018).

Section 101 of the Patent Act defines patent-eligible subject matter. It states, “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C. § 101. The Supreme Court has held that there are exceptions to § 101. “Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (internal quotation marks and citation omitted). “[I]n applying the § 101 exception, [the court] must distinguish between patents that claim the ‘building blocks’ of human ingenuity and those that integrate the building blocks into

something more[] thereby ‘transforming’ them into a patent-eligible invention. The former ‘would risk disproportionately tying up the use of the underlying’ ideas, and are therefore ineligible for patent protection. The latter pose no comparable risk of pre-emption, and therefore remain eligible for the monopoly granted under our patent laws.” *Id.* at 217 (cleaned up).

The Supreme Court’s *Alice* decision established a two-step framework for determining patent-eligibility under § 101. In the first step, the court must determine whether the claims at issue are directed to a patent ineligible concept. *Id.* In other words, are the claims directed to a law of nature, natural phenomenon, or abstract idea? *Id.* If the answer to the question is “no,” then the patent is not invalid for teaching ineligible subject matter under § 101. If the answer to the question is “yes,” then the court proceeds to step two, where it considers “the elements of each claim both individually and as an ordered combination” to determine if there is an “inventive concept—i.e., an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.” *Id.* at 217–18 (alteration in original). “A claim that recites an abstract idea must include ‘additional features’ to ensure that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].” *Id.* at 221 (internal quotation marks and citation omitted). Further, “the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment.” *Id.* at 222 (quoting *Bilski*, 561 U.S. at 610–11). Thus, “the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.” *Id.* at 223. “The question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field,” which underlies the second step of *Alice*, “is a question of fact. Any fact, such as

this one, that is pertinent to the invalidity conclusion must be proven by clear and convincing evidence.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).

III. DISCUSSION

a. Collateral Estoppel

Defendants eHarmony and The Meet Group argue claims 1 through 9 of the ’875 patent should be dismissed based on collateral estoppel. No. 22-480, D.I. 31 at 2, 5; No. 22-484, D.I. 13 at 2, 5. On November 18, 2021, during a *Markman* hearing in a different case involving Wireless Discovery, Judge Albright held claim 1 of the ’875 patent indefinite and, therefore, invalid. *Wireless Discovery LLC v. Bumble Trading Inc.*, No. 6:20-cv-00762, D.I. 43 at 5 (W.D. Tex. Nov. 18, 2021). With respect to claim 1 of the ’875 patent, the Court finds Wireless Discovery is collaterally estopped from asserting that claim. A court may consider the preclusive effect of another federal district court judgment on a motion to dismiss under Rule 12(b)(6). *M & M Stone Co. v. Pennsylvania*, 388 F. App’x 156, 162 (3d Cir. 2010). When deciding a Rule 12(b)(6) motion, a court should consider “documents that are attached to or submitted with the complaint, [] and any ‘matters incorporated by reference or integral to the claim, items subject to judicial notice, matters of public record, orders, [and] items appearing in the record of the case.’” *Buck v. Hampton Twp. Sch. Dist.*, 452 F.3d 256, 260 (3d Cir. 2006) (citing 5B Charles A. Wright & Arthur R. Miller, *Federal Practice & Procedure* § 1357 (3d ed. 2004)). “[A] prior judicial opinion constitutes a public record of which a court may take judicial notice.” *M & M Stone*, 338 F. App’x at 162.

The Federal Circuit has held that “once the claims of a patent are held invalid in a suit involving one alleged infringer, an unrelated party who is sued for infringement of those claims may reap the benefit of the invalidity decision under the principles of collateral estoppel.” *See*

Pharmacia & Upjohn Co. v. Mylan Pharms., Inc., 170 F.3d 1373, 1379 (Fed. Cir. 1999) (quoting *Mendenhall v. Barber-Greene Co.*, 26 F.3d 1573, 1577 (Fed. Cir. 1994)). Defendants eHarmony and The Meet Group “may reap the benefit of [Judge Albright’s] invalidity decision under the principles of collateral estoppel.” *See Pharmacia*, 170 F.3d at 1379 (quotation omitted). Wireless Discovery provides no substantive arguments why independent claim 1 of the ’875 patent should not be dismissed because of collateral estoppel. *See generally* No. 22-480, D.I. 39; No. 22-484, D.I. 23.

The Court will not decide on the merits whether claims 2 through 9 of the ’875 patent are collaterally estopped. During the *Markman* hearing, Judge Albright did not determine whether claims 2 through 9 of the ’875 patent were indefinite. However, Wireless Discovery stated during oral argument and in its briefing that it no longer asserts claims 1 through 9 of the ’875 patent. *See* No. 22-480, D.I. 39 at 3; Tr. 23:22:25. Thus, the Court finds Defendants eHarmony’s and The Meet Group’s collateral estoppel arguments regarding claims 2 through 9 of the ’875 patent unopposed.

For the reasons discussed above, Wireless Discovery is collaterally estopped from asserting claims 1 through 9 of the ’875 patent.

b. Attorney Fees Under § 285

In its reply brief, eHarmony also requests the Court to find this case “exceptional” under 35 U.S.C. § 285 and award eHarmony attorney fees. No. 22-480, D.I. 40 at 9-10. The Court finds that eHarmony’s request is waived because it was first fully briefed in its reply brief. *See id.* Wireless Discovery also has not had the opportunity to respond to eHarmony’s request. Thus, the Court denies eHarmony’s request for attorney fees under 35 U.S.C. § 285 without prejudice.

c. Patent Eligible Subject Matter

a. Representativeness

In the eHarmony case, the parties dispute whether certain claims of the asserted patents are representative. *See* No. 22-480, D.I. 31 at 6-14, D.I. 39 at 3-7, D.I. 40 at 2. eHarmony argues that claim 10 of the '875 patent is representative, claim 1 of the '352 patent is representative of claims 2 through 32, claim 1 of the '267 patent is representative of claims 2 through 18, and claim 1 of the '397 patent is representative of claims 2 through 15. No. 22-480, D.I. 31 at 6-14.

Claim 10 of the '875 patent recites a method to match members of a social network in the same vicinity. It states:

10. A method comprising:

providing, via a computing device, accessible through any of an internet connection and a mobile telecommunications provider network, access to stored user profile information about a first user using a respective first mobile communications device and a second user, using a respective second mobile communications device;

receiving, via the computing device, indications of the locations of the first and second mobile communications devices;

receiving, via the computing device, a unique device hardware identifier from all communications devices from all users linked in a social network to associate with profiles and authenticate when users sign in to a user account;

sending, via the computing device, to the second mobile communications device, an invitation to accept any of an invitation to connect and personal attribute information from, or share personal attribute information with, the first user, upon receipt of permission from the second user to receive personal attribute information about, or share personal attribute information with, the first user; and

connecting, via the computing device, the first user and the second user through the computing device for personal communication between first user and the second user, the personal communication comprising one or more SMS, E-mail, chat/instant messaging, multimedia, voice or video,

wherein the computing device is configured to locate information about the second user from a social network file of the second user, and transmit this information to the first mobile communications device, and

wherein the first and second users are members of a same social network, and the computing device is operable to disclose social network attributes such as a picture, name, and a location of first and second users in the vicinity or within a particular distance from one another for the purpose of connecting members.

No. 22-480, D.I. 21-5 at claim 10.

Claim 1 of the '352 patent recites a social networking system to match members of a social network in the same vicinity. It states:

1. A system comprising:

a computing device configured to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members such as picture(s) and name, wherein said computing device associates unique hardware identification of member devices and login credentials with member profiles and via a search process returns searches of members for others in a vicinity or in proximity thereto, and with personal attributes comprising pictures and names bringing an image of a human face to a device allocation in said search process; and

a first user using a respective first mobile communications device and a second user using a respective second mobile communications device each capable of connecting to the internet through any of a mobile telecommunications provider network and a local area wireless network,

wherein said computing device being in communication with the first and second mobile communication devices through internet connection via an application installed on the respective first and second mobile communication devices of the users, and configured to provide access to stored user profile information about said first user and said second user, respectively, including personal attributes comprising picture(s), a name, information, and a location,

wherein said computing device is configured to store static locations of members and receive information identifying current dynamic locations of all members based on real time location reporting from a client side application,

wherein said computing device is configured to calculate and determine a proximity of user locations based on any of a static and a dynamic location of the members which are updated on a profile database of said members,

wherein said computing device is configured to send to said first user upon inquiring of other members in the vicinity of said first user, personal attributes of all other members based on proximity calculations to select members that said first user may wish to connect with, and to send to said second mobile communication device an invitation on behalf of said first user and including first user personal attributes for said second user to accept connecting with said first user,

wherein said computing device is configured to connect said first user and said second user through a members-only-social-network communication tools between said first user and said second user, wherein said communication tools comprise any of SMS, E-mail, chat/instant messaging, multimedia, voice, and video, and

wherein said computing device is configured to locate information about said second user from a social network storage file of said second user, and transmit this information to said first mobile communications device for further information beyond first introductory attributes such as picture and name only.

No. 22-480, D.I. 21-3 at claim 1.

Claim 1 of the '267 patent recites a social networking system to match members of a social network in the same vicinity. It states:

1. A system comprising:

a computing device configured to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members;

a first mobile communications device communicatively linked to said computing device; and

a second mobile communications device communicatively linked to said computing device,

wherein said computing device provides access to stored user profile information about a first user and a second user,

wherein said computing device is configured to store static locations of members and receive information identifying current dynamic locations of all members in said network,

wherein said computing device is configured to calculate and determine a proximity of user locations,

wherein said computing device is configured to send to said first user upon inquiring of other members in said network of said first user, personal attributes of all other members based on proximity calculations to select members that said first user may wish to connect with, and to send to said second mobile communication device an invitation on behalf of said first user for said second user to accept connecting with said first user,

wherein said computing device is configured to communicatively connect said first user and said second user,

wherein said computing device is configured to locate information about said second user from a social network storage file of said second user, and transmit this information to said first mobile communications device,

wherein the first user and the second user are members of a same social network, and the computing device is to disclose non-anonymous social network attributes including a picture, name, and location of the first user and the second user in a vicinity or within a predetermined distance from one another for the purpose of connecting members of the same social network based in part on proximity calculations between connecting members,

wherein said computing device permits discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by said first user, wherein said computing device permits said discoverable members to have their respective devices unconnected to an internet connection service at said time of the search being conducted by said first user, and wherein any of turned off devices and disconnected devices is discoverable by said computer device as said internet connection service is configured to report said any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to said first user.

No. 22-480, D.I. 21-6 at claim 1.

Claim 1 of the '397 patent recites a social networking system that matches users in the same vicinity. It states:

1. A server configured to communicate with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network, wherein the server comprises a processor configured to:

store in a data storage device a first profile associated with the first user and a second profile associated with a second user, both the first and the second profile comprises at least a picture and a name of their respective users thereby automatically eliminating anonymous communication of the first profile and the second profile between member devices without intervention by the first user or the second user;

associate each member profile with a unique hardware identification associated with the member devices;

identify a unique ID of a second member in the vicinity and spatial proximity of a first member and provide the first member with the profile of the second member comprising a picture and name to facilitate a connection between both members;

send the second member the profile of the first member including the picture and name upon the first member initiating an invite to the second member to connect over a networking service;

inform the first member if the second member has accepted or rejected the invite to connect initiated by the first member; and

once the second member accepts the invite of the first member, store the connectivity between both members in the data storage device and facilitate a chat feature between them using respective devices connected to the server,

wherein the first user and the second user are members of a same social network, and the processor is to disclose non-anonymous social network attributes including a picture, name, and location of the first user and the second user in a vicinity or within a predetermined distance from one another for the purpose of connecting members of the same social network based in part on proximity calculations between connecting members,

wherein the server permits discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by the first user, wherein the server permits the discoverable members to have their respective devices unconnected to an internet connection service at the time of the search being conducted by the first user, and wherein any of turned off devices and disconnected devices is discoverable by the server as the internet connection service is configured to report the any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to the first user.

No. 22-480, D.I. 21-4 at claim 1.

Wireless Discovery disagrees with eHarmony's representativeness arguments "that one claim of each asserted patent is representative of all claims." No. 22-480, D.I. 39 at 3. Wireless

Discovery, for example, states that claims 11 through 19 of the '875 patent “add additional concrete and technical elements and steps requiring separate patentability analysis.” *Id.* However, Wireless Discovery fails to describe *what* additional concrete and technical elements the other claims recite that would require the Court to conduct a separate patentability analysis. In fact, for the other asserted patents, Wireless Discovery simply states, “[t]here are additional examples of differences in the claims of each of the Asserted Patents that for purposes of brevity are not all identified here.” *Id.* Wireless Discovery fails to “present any meaningful argument for the distinctive significance of any claim limitations not found in the representative claim.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1365 (Fed. Cir. 2018) (citations omitted).

For example, Wireless Discovery argued during oral argument that claim 10 of the '875 patent's recitation of a unique device hardware identifier provides a “hardware solution[].” *See* Tr. 27:10-19. The Court, however, is not convinced by Wireless Discovery's arguments that the other claims of the asserted patents have different concrete and technical elements and steps requiring separate patentability analysis. The unique hardware identifier and turning on and off functionality are just generic computing components used for their conventional purpose.

In *The Meet Group* case, *The Meet Group* argues that claim 10 of the '875 patent, which is the only asserted patent in that case, is representative. No. 22-484, D.I. 13 at 8-9. Wireless Discovery does not dispute that claim 10 of the '875 patent is representative in its briefing in *The Meet Group* case. *See generally* No. 22-484, D.I. 20. Thus, eHarmony's and *The Meet Group*'s identification of representative claims control for purposes of determining patent-eligibility under § 101.

b. Alice Step 1

The Court must first determine whether the asserted patents are directed toward a patent-ineligible concept. The Court finds the representative claims are directed to the abstract idea of social networking. For example, claim 10 of the '875 patent can be distilled down to the following seven steps: (1) “providing ‘user profile information’ about two users of ‘mobile communications devices,’” (2) “receiving ‘indications’ of the devices’ locations,” (3) “receiving ‘identifiers’ of all devices on a ‘social network,’” (4) “sending one user’s ‘invitation’ to exchange information with another user,” (5) “connecting users for ‘personal communication,’” (6) transmitting information from one user’s ‘social network file’ to the other user’s device,” and (7) “disclosing ‘social network attributes’ of users who are ‘in the vicinity of or within a particular distance from’ each other.” No. 22-480, D.I. 31 at 15. Claim 10 of the '875 patent is directed to “the abstract idea of automating the conventional establishment of social networks to allow humans to exchange information and form relationships.” *NetSoc, LLC v. Match Grp., LLC*, 838 F. App’x 544, 548 (Fed. Cir. 2020). Courts in this District and other districts have also found claims similar to claim 10 of the '875 patent abstract. In *Jedi Techs., Inc. v. Spark Networks, Inc.*, the court found patents related to the idea “of matching people based on criteria such as personality traits or location” abstract. No. 16-1055-GMS, 2017 WL 3315279, at *7 (D. Del. Aug. 3, 2017). Courts have also found “the basic concept of controlled exchange of information about people as historically practiced by matchmakers and headhunters” to be drawn to an abstract idea and claims directed to “[m]atching based on geographic location” abstract. *Walker Digit., LLC v. Google, Inc.*, 66 F. Supp. 3d 501, 508 (D. Del. 2014) (first quote); *Perry St. Software, Inc. v. Jedi Techs., Inc.*, 548 F. Supp. 3d 418, 433 (S.D.N.Y. 2021) (second quote).

Claim 10 of the '875 patent is no different than these cases. In fact, Wireless Discovery appears to agree that the representative claims of the asserted patents are directed to the abstract idea of social networking. Wireless Discovery states in its brief that “[t]he Claims of the [']875 patent are directed to improvements in exchanging information using mobile communications devices, in particular discovering members of a social network by associating their personal attributes to the mobile communications devices for purposes of exchange.” No. 22-480, D.I. 39 at 13.

Claim 10’s recitation of data-processing steps does not change the Court’s analysis regarding whether the representative claims are directed to an abstract idea. In *NetSoc*, the claims at issue recited additional data-processing steps and the Federal Circuit still found the claims at issue directed to an abstract idea:

The claim limitations of “maintaining” a list of participants, “presenting” a user with selectable categories, “receiving” the user’s category selection, “receiving” an inquiry from the user, “selecting” a participant to receive the user’s inquiry, “sending” the inquiry to the participant, “receiving” a response to the inquiry from the participant, “publishing” the response, and “tracking” feedback of the participants . . . are directed to automating a longstanding, well-known method of organizing human activity, similar to concepts previously found to be abstract.

NetSoc, 838 F. App’x at 550.

Similarly, the recitation of data-processing steps, e.g., sending, receiving, and processing data, in claim 10 of the '875 patent do not save the claims from being directed to an abstract idea.

The other representative claims are directed to the abstract idea of social networking. Claim 1 of the '352 patent can be distilled down to the following eight elements: (1) “a server hosting a social network that shares members’ name and pictures, associates device identifiers and logins with ‘member profiles,’ searches based on location, and delivers search results that include ‘an image of a human face;’” (2) “users using mobile devices ‘capable of connecting to the

internet;” (3) “an app on each device that allows the users to access social network profiles;” (4) “the server stores the devices’ locations;” (5) “the server determines the proximity of two users;” (6) “the server sends one user search results of other nearby members of the social network and sends a second user an invitation;” (7) the server connects the two users ‘through a members-only-social-network communication tools [sic] . . . of SMS, E-mail, chat/instant messaging, multimedia, voice, and video;’ and (8) the server sends the first user information about the second user.” No. 22-480, D.I. 31 at 16. Like claim 10 of the ’875 patent, claim 1 of the ’352 patent is directed to the abstract idea of automating the conventional establishment of social networks to allow “nearby members of the social network” to exchange information and form relationships. *NetSoc*, 838 F. App’x at 548.

Claim 1 of the ’267 patent can be distilled down to the following eleven elements: (1) “a server hosting a social network that shares members’ ‘personal attributes;” (2) “a first mobile device;” (3) “a second mobile device;” (4) “the server providing access to users’ ‘profiles;” (5) “the server stores user locations;” (6) “the server determines the proximity of users;” (7) “the server sends one user search results of other nearby members of the social network and sends a second user an invitation;” (8) “the server connects the two users;” (9) “the server sends the first user additional information about the second user;” (10) “the ‘first user and the second user are members of a same social network’ and the server discloses social network profile information to each other to allow the users to connect;” and (11) “the server allows users to connect even if one is offline based on the latest location.” No. 22-480, D.I. 31 at 17. Like claim 10 of the ’875 patent and claim 1 of the ’352 patent, claim 1 of the ’267 patent is directed to the idea of automating the conventional establishment of social networks to allow “nearby members of the social network” to exchange information and form relationships. *NetSoc*, 838 F. App’x at 548.

Finally, claim 1 of the '397 patent can be distilled down to the following eight steps: (1) “storing user profiles;” (2) “associating each profile with a ‘hardware identification’ of each social network member’s device;” (3) “identifying an ‘ID’ of a member nearby another member and displaying the profile information ‘to facilitate a connection’;” (4) “‘initiating an invite . . . to connect over a networking service’ and sharing the profile information of the member who initiated the invitation;” (5) “informing whether the ‘invite’ is ‘accepted or rejected’;” (6) “storing the ‘connectivity’ between the members and facilitating ‘a chat feature’;” (7) “the members ‘are members of a same social network’ and disclosing profile information of nearby members ‘for the purpose of connecting members of the same social network’;” and (8) “the server allows members to connect even if one is offline.” No. 22-480, D.I. 31 at 17-18. Like the other representative asserted claims, claim 1 of the '397 patent is directed to the abstract idea of social networking.

Wireless Discovery also argued during oral argument that the asserted patents are not directed to an abstract idea because they are directed to a telecommunications network. *See, e.g.*, Tr. 36:1-7; 37:8-11. According to Wireless Discovery, the asserted patents add additional “hardware solutions” to allow communications between mobile devices. *See* Tr. 27:10-19. Thus, Wireless Discovery concludes that the claims of the asserted patents “are directed toward specific means and methods that improve relevant technologies.” Tr. 31:1-6 (citing *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016)).

The Court disagrees with Wireless Discovery’s argument that the claims are not directed to an abstract idea. In *McRO*, the Federal Circuit held the invention recited “specific rules” or algorithms for a computer to “achieve an improved technological result,” i.e., to produce “accurate and realistic lip synchronization and facial expression in animated characters.” *McRO*, 837 F.3d at 1313-16. In the instant action, none of the representative claims recite any specific rules or

algorithms to improve a telecommunications network. Rather, the claims recite purely functional steps related to the abstract idea of exchanging information about people based on their location and membership in an organization.

For the above reasons, the Court finds the representative asserted claims are directed to the abstract idea of social networking. The Court must now proceed to *Alice* step two.

c. *Alice* Step 2

In *Alice* step two, the Court considers the elements of the claim, both individually and as an ordered combination, to assess whether “the limitations present in the claims represent a patent-eligible application of the abstract idea.” *Content Extraction & Transmission LLC v. Wells Fargo Bank*, 776 F.3d 1343, 1347 (Fed. Cir. 2014) (citation omitted). Merely reciting the use of a generic computer or adding the words “apply it with a computer” cannot convert a patent-ineligible abstract idea into a patent-eligible invention. *Alice*, 573 U.S. at 223; *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1332 (Fed. Cir. 2015). “To save a patent at step two, an inventive concept must be evident in the claims.” *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (citation omitted).

The Court finds no saving inventive concept in any of the representative asserted claims. The asserted patents describe a social network system that uses “available technology and standard protocols available today,” including a “standard cell phone,” a “cellular phone network,” “existing standard Bluetooth technology,” and “Wi-Fi.” No. 22-480, D.I. 21-5 at 2:31, 2:43-44, 2:50, 4:17-20, 11:45-46. Nothing in the representative asserted claims require anything other than “off-the-shelf, conventional computer, network, and display technology for gathering, sending, and presenting the desired information.” *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350,

1355 (Fed. Cir. 2016). In other words, the representative asserted claims “mere[ly] recit[es] a generic computer,” which is not an inventive concept that could “transform a patent-ineligible abstract idea into a patent-eligible invention.” *Alice*, 573 U.S. at 223. The representative asserted claims in this action fail to add “a technological improvement to the computer or otherwise provide ‘something more’ to ‘transform’ the claims. *NetSoc*, 838 F. App’x at 549 (citing *Alice*, 573 U.S. at 217).

Wireless Discovery makes several conclusionary statements that the asserted patents recite an inventive concept. *See generally* No. 22-480, D.I. 39; No. 22-484, D.I. 20. For example, Wireless Discovery states that the inventive concept of the ’267 patent is “easily exchanging contact and/or personal information over the internet for purposes of social interaction by way of mobile devices without limitations to hardware brands.” No. 22-480, D.I. 39 at 4. However, Wireless Discovery’s alleged inventive concepts are merely rephrasing the abstract idea and saying it is an inventive concept, which is improper. *Trading Techs. Int’l, Inc. v. IBM LLC*, 921 F.3d 1084, 1093 (Fed. Cir. 2019) (“[t]he abstract idea itself cannot supply the invention concept, ‘no matter how groundbreaking the advance.’” (internal citations omitted)).

Moreover, “[a] claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’ Those ‘additional features’ must be more than ‘well-understood, routine, conventional activity.’” *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014) (citations omitted). Wireless Discovery fails to show how the alleged inventive concepts are more than well-understood, routine, or conventional. Tellingly, Wireless Discovery only cites to the specification in its brief, not to the claims, to support its bare assertions that the asserted patents recite an inventive concept. *See generally* No. 22-480, D.I. 39; No. 22-484, D.I. 20. Wireless Discovery’s analysis is flawed

because its conclusory statements about the asserted patents' inventive concepts are untethered to the claim language of the asserted patents. *See ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 769 (Fed. Cir. 2019) ("The § 101 inquiry must focus on the language of the Asserted Claims themselves, and the specification cannot be used to import details from the specification if those details are not claimed." (internal citations and quotation marks omitted)); *see also American Axle & Mfg., Inc. v. Neapco Holdings LLC*, 967 F.3d 1285, 1293 (Fed. Cir. 2020) ("[F]eatures that are not claimed are irrelevant as to step 1 or step 2 of the Mayo/Alice analysis").

Wireless Discovery also argued during oral argument that the asserted patents recite interactions that create a social network that is "manipulated to yield the desired result, allowing connection of devices without requiring hardware compatibility, a result that overrides any consideration that this is a routine and conventional sequence of events ordinarily encountered in forming a social network." Tr. 40:5-11. The Court disagrees and finds the computer components recited in the claims are used for their conventional purposes. The representative asserted claims recite "establishing a social network on a computer," which "are quintessential 'apply it with a computer' claims." *NetSoc*, 838 F. App'x. 544 at 548-49 (citation omitted).

For the above reasons, the Court finds no inventive concept that transforms the representative claims into a patent-eligible application of the abstract idea. Thus, the Court finds by clear and convincing evidence that the representative claims fail *Alice* step 2 and the '875, '362, '267, and '397 patents are invalid under § 101.

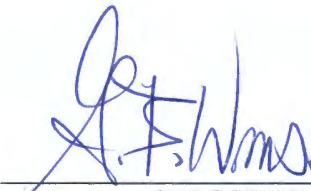
d. Wireless Discovery's Request for Leave to Amend

Wireless Discovery also requests leave to amend its complaint "if the Court believes the teachings and citations from the patents-in-suit should be incorporated into the complaint." *See*

No. 22-480, D.I. 39 at 20; *see also* No. 22-484, D.I. 20 at 15. When deciding a Rule 12(b)(6) motion, a court considers “documents that are attached to or submitted with the complaint.” *Buck v. Hampton Twp. Sch. Dist.*, 452 F.3d 256, 260 (3d Cir. 2006) (citation omitted). Wireless Discovery attached to its complaint the asserted patents. No. 22-480, D.I. 21-3, D.I. 21-4, D.I. 21-5, D.I. 21-6; No. 22-484, D.I. 1-3. The Court reviewed those patents when deciding the pending Motions to Dismiss. The claims of the patents say what they say. Amending the complaint would not change the Court’s § 101 analysis. Thus, Wireless Discovery’s amendments would be futile, and the Court denies Wireless Discovery’s request.

IV. CONCLUSION

Therefore, at Wilmington this 6th day of February 2023, **IT IS HEREBY ORDERED** that The Meet Group’s Motion to Dismiss for Failure to State a Claim (No. 22-484, D.I. 12) is **GRANTED** and eHarmony’s Motion to Dismiss for Failure to State a Claim (No. 22-480, D.I. 30) is **DENIED-IN-PART** and **GRANTED-IN-PART**.



GREGORY B. WILLIAMS
UNITED STATES DISTRICT JUDGE

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE**

WIRELESS DISCOVERY LLC, Plaintiff, v. COFFEE MEETS BAGEL, INC., Defendant.	C.A. No. 22-478-GBW
WIRELESS DISCOVERY LLC, Plaintiff, v. DOWN APP, INC., Defendant.	C.A. No. 22-479-GBW
WIRELESS DISCOVERY LLC, Plaintiff, v. GRINDR, INC., Defendant.	C.A. No. 22-481-GBW
WIRELESS DISCOVERY LLC, Plaintiff, v. HILY CORP., Defendant.	C.A. No. 22-482-GBW

MEMORANDUM ORDER

Presently before this Court is Defendant Coffee Meets Bagel, Inc.'s ("Coffee Meets Bagel"), Defendant Down App, Inc.'s ("Down App"), Defendant Grindr, Inc.'s ("Grindr"), and Defendant Hily, Corp.'s ("Hily") (collectively, "Defendants") Motions to Dismiss for Failure to State a Claim under Federal Rule of Civil Procedure 12(b)(6) (the "Motion"). C.A. No. 22-478, D.I. 24; C.A. No. 22-479, D.I. 25; C.A. No. 22-481, D.I. 27; C.A. No. 22-482, D.I. 25.¹ The Court has reviewed the parties' briefing, D.I. 25, D.I. 30, D.I. 36,² and heard oral argument on December 14, 2022.³ ("Tr. ____"). For the reasons below, the Court GRANTS Defendants' Motion.

I. BACKGROUND

On April 13, 2022, Plaintiff Wireless Discovery LLC ("Wireless Discovery") sued Defendants in separate patent infringement cases asserting infringement of U.S. Patent No. 9,264,875 ("the '875 patent"). D.I. 1. Wireless Discovery amended its complaint on July 18, 2022, asserting three additional patents: U.S. Patent Nos. 9,357,352 (the "'352 patent"), 10,321,267 (the "'267 patent"), and 10,334,397 (the "'397 patent"). D.I. 17; No. 22-479, D.I. 18; No. 22-481, D.I. 20; No. 22-482, D.I. 19.

¹ All docket entries are citations to Civil Docket No. 22-478, unless otherwise indicated.

² The parties also filed letter briefs identifying which U.S. Supreme Court or Federal Circuit case(s) they contend is most similar to the patent(s)-at issue. D.I. 42, D.I. 43.

³ The Court also heard oral argument on Defendant eHarmony, Inc.'s and Defendant The Meet Group, Inc.'s Motion to Dismiss in *Wireless Discovery LLC v. eHarmony, Inc.*, No. 22-480 and *Wireless Discovery LLC v. The Meet Group, Inc.*, No. 22-484. C.A. No. 22-480, D.I. 30; C.A. No. 22-484, D.I. 12. The Court issued a similar but separate opinion in those cases. The Court similarly finds in those cases that the asserted patents are not patent eligible under 35 U.S.C. § 101. The Court also granted Defendant eHarmony, Inc.'s and Defendant The Meet Group, Inc.'s Motions to Dismiss claims 1 through 9 of the '875 patent based on collateral estoppel.

The asserted patents are all from the same patent family and are continuations-in-part of U.S. Patent No. 8,914,024, which is not asserted in any of these cases. *See* D.I. 25 at 3. The asserted patents all relate generally to the idea of social networking, i.e., discovering members of the same social network in the same vicinity and exchanging member's personal information. *See* D.I. 17-5 at 1:16-22 ("The invention relates to discovering members of a social network by associating their personal attributes to the mobile device for the purpose of exchanging information using mobile communication devices and, in particular, exchanging personal information between one or more mobile communication devices.").

Individuals can "use their mobile phones to discover others by personal attributes, such as by photos and names, after which, the two parties can exchange information over the internet." *Id.* at 2:4-7. These individuals can discover other members who are located "within a vicinity." *Id.* at 4:4-6. The "vicinity" is determined by a location that was reported to the server, in the geographic area specified by a user's "search criteria," or by a location recorded in a database. *Id.* at 5:4-15.

Individuals can send "invitations" to other members in the vicinity. *Id.* at 5:14-22. "The invitation may take the form of a social card, VCard, or other manner of engaging another person in a social atmosphere, or even a business setting such as a meeting, trade show, conference, etc." *Id.* at 5:18-22. If a user accepts the "invitation," "members can elect to exchange or send personalized, intimate contact information over the internet after the users have discovered each other." *Id.* at 4:10-12. The invention "provides a system and method that enables free discovery of others who also desire social interaction, but without being constrained by hardware compatibility issues inherent in mobile devices by different manufacturers." *Id.* at 2:20-24.

II. LEGAL STANDARD

a. Motion to Dismiss Under Rule 12(b)(6)

To state a claim on which relief can be granted, a complaint must contain “a short and plain statement of the claim showing that the pleader is entitled to relief” Fed. R. Civ. P. 8(a)(2). Such a claim must plausibly suggest “facts sufficient to ‘draw the reasonable inference that the defendant is liable for the misconduct alleged.’” *Doe v. Princeton Univ.*, 30 F.4th 335, 342 (3d Cir. 2022) (quoting *Ashcroft v. Iqbal*, 556 U.S. 662, 678 (2009)) (citing *Bell Atl. Corp. v. Twombly*, 550 U.S. 544, 557 (2007)). “A claim is facially plausible ‘when the plaintiff pleads factual content that allows the court to draw the reasonable inference that the defendant is liable for the misconduct alleged.’” *Klotz v. Celentano Stadtmauer & Walentowicz LLP*, 991 F.3d 458, 462 (3d Cir. 2021) (quoting *Iqbal*, 556 U.S. at 678). But the Court will “‘disregard legal conclusions and recitals of the elements of a cause of action supported by mere conclusory statements.’” *Princeton Univ.*, 30 F.4th at 342 (quoting *Davis v. Wells Fargo*, 824 F.3d 333, 341 (3d Cir. 2016)). Under Rule 12(b)(6), the Court must accept as true all factual allegations in the Complaint and view those facts in the light most favorable to the plaintiff. *See Fed. Trade Comm’n v. AbbVie Inc.*, 976 F.3d 327, 351 (3d Cir. 2020).

b. Patent Eligible Subject Matter

Patentability under 35 U.S.C. § 101 is a threshold legal issue. *Bilski v. Kappos*, 561 U.S. 593, 602 (2010). Section 101 inquiry is properly raised at the pleading stage if it is apparent from the face of the patent that the asserted claims are not directed to eligible subject matter. *Cleveland Clinic Found. v. True Health Diagnostics LLC*, 859 F.3d 1352, 1360 (Fed. Cir. 2017), *cert. denied*, 138 S. Ct. 2621 (2018); *see also SAP Am., Inc. v. InvestPic, LLC*, 898 F.3d 1161, 1166 (Fed. Cir. 2018) (stating that patent eligibility “may be, and frequently has been, resolved on a Rule 12(b)(6)

or (c) motion”); *FairWarning IP, LLC v. Iatric Sys., Inc.*, 839 F.3d 1089, 1097 (Fed. Cir. 2016) (stating that “it is possible and proper to determine patent eligibility under 35 U.S.C. § 101 on a Rule 12(b)(6) motion” (quoting *Genetic Techs. Ltd. v. Merial L.L.C.*, 818 F.3d 1369, 1373–74 (Fed. Cir. 2016))); *Voter Verified, Inc. v. Election Sys. & Software LLC*, 887 F.3d 1376, 1379 (Fed. Cir. 2018) (affirming Rule 12(b)(6) dismissal based on § 101 patent ineligibility). This is, however, appropriate “only when there are no factual allegations that, taken as true, prevent resolving the eligibility question as a matter of law.” *Aatrix Software, Inc. v. Green Shades Software, Inc.*, 882 F.3d 1121, 1128 (Fed. Cir. 2018).

Section 101 of the Patent Act defines patent-eligible subject matter. It states, “[w]hoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.” 35 U.S.C. § 101. The Supreme Court has held that there are exceptions to § 101. “Laws of nature, natural phenomena, and abstract ideas are not patentable.” *Alice Corp. Pty. v. CLS Bank Int’l*, 573 U.S. 208, 216 (2014) (internal quotation marks and citation omitted). “[I]n applying the § 101 exception, [the court] must distinguish between patents that claim the ‘building blocks’ of human ingenuity and those that integrate the building blocks into something more[] thereby ‘transforming’ them into a patent-eligible invention. The former ‘would risk disproportionately tying up the use of the underlying’ ideas, and are therefore ineligible for patent protection. The latter pose no comparable risk of pre-emption, and therefore remain eligible for the monopoly granted under our patent laws.” *Id.* at 217 (cleaned up).

The Supreme Court’s *Alice* decision established a two-step framework for determining patent-eligibility under § 101. In the first step, the court must determine whether the claims at issue are directed to a patent ineligible concept. *Id.* In other words, are the claims directed to a

law of nature, natural phenomenon, or abstract idea? *Id.* If the answer to the question is “no,” then the patent is not invalid for teaching ineligible subject matter under § 101. If the answer to the question is “yes,” then the court proceeds to step two, where it considers “the elements of each claim both individually and as an ordered combination” to determine if there is an “inventive concept—i.e., an element or combination of elements that is sufficient to ensure that the patent in practice amounts to significantly more than a patent upon the [ineligible concept] itself.” *Id.* at 217-18 (alteration in original). “A claim that recites an abstract idea must include ‘additional features’ to ensure that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].” *Id.* at 221 (internal quotation marks and citation omitted). Further, “the prohibition against patenting abstract ideas cannot be circumvented by attempting to limit the use of [the idea] to a particular technological environment.” *Id.* at 222 (quoting *Bilski*, 561 U.S. at 610–11). Thus, “the mere recitation of a generic computer cannot transform a patent-ineligible abstract idea into a patent-eligible invention.” *Id.* at 223. “The question of whether a claim element or combination of elements is well-understood, routine and conventional to a skilled artisan in the relevant field,” which underlies the second step of *Alice*, “is a question of fact. Any fact, such as this one, that is pertinent to the invalidity conclusion must be proven by clear and convincing evidence.” *Berkheimer v. HP Inc.*, 881 F.3d 1360, 1368 (Fed. Cir. 2018).

III. DISCUSSION

a. Representativeness

The parties dispute whether certain claims of the asserted patents are representative. *See* D.I. 25 at 6-8, D.I. 30 at 3-4, D.I. 36 at 2-3. Defendants argue that claim 10 of the '267 patent is representative of the other claims in the asserted patents, because all the claims contain the “same essential elements.” D.I. 25 at 6. Claim 10 of the '267 patent recites:

10. A method comprising:

using a computing device to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members;

communicatively linking a first mobile communications device to said computing device; communicatively linking a second mobile communications device to said computing device;

using said computing device to provide access to stored user profile information about a first user and a second user;

using said computing device to store static locations of members and receive information identifying current dynamic locations of all members in said network;

using said computing device to calculate and determine a proximity of user locations;

using said computing device to send to said first user upon inquiring of other members in said network of said first user, personal attributes of all other members based on proximity calculations to select members that said first user may wish to connect with, and to send to said second mobile communication device an invitation on behalf of said first user for said second user to accept connecting with said first user;

using said computing device to communicatively connect said first user and said second user;

using said computing device to locate information about said second user from a social network storage file of said second user, and transmit this information to said first mobile communications device, wherein the first user and the second user are members of a same social network, and the computing device is to disclose non-anonymous social network attributes including a picture, name, and location of the first user and the second user in a vicinity or within a predetermined distance from one another for the purpose of connecting members of the same social network based in part on proximity calculations between connecting members;

using said computing device to permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by said first user; and

using said computing device to permit said discoverable members to have their respective devices unconnected to an internet connection service at said time of the search being conducted by said first user,

wherein any of turned off devices and disconnected devices is discoverable by said computer device as said internet connection service is configured to report said any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to said first user.

D.I. 17-6 at claim 10.

Claim 10 of the '267 patent can be distilled down to the following seven steps: “(1) ‘linking’ mobile devices to a computer, (2) accessing user profiles and membership, (3) using user location, (4) determining user proximity, (5) exchanging ‘personal attributes’ of users and invitations to connect, [] (6) connecting members for communication, [and] (7) allowing offline connecting.” D.I. 25 at 6 (citing D.I. 17-6 at claim 10). The other asserted patents are “substantially similar.” *Content Extraction and Transmission LLC v. Wells Fargo Bank*, 776 F.3d 1343, 1348 (Fed. Cir. 2014) (citation omitted); *see also* D.I. 36 at 2-3. In fact, in Wireless Discovery’s opposition brief, it states that the asserted patents are directed to nearly verbatim ideas. *Compare* D.I. 30 at 7 (“The Claims of the [']875 patent are directed to improvements in exchanging information using mobile communications devices, in particular discovering members of a social network by associating their personal attributes to the mobile communications devices for purposes of exchange”) *with id.* at 11 (“The Claims of the [']267 patent are directed to improvements in exchanging information using mobile communications devices, in particular discovering personal attributes for purposes of exchange.”).

Defendants argue that there are also no meaningful differences “that would make [c]laim 10 of the '267 [p]atent anything other than ‘substantially similar’ to the other asserted claims.” D.I. 36 at 2 (citation omitted). Defendants note that independent claim 1 of the '267 patent is a system claim version of claim 10 of the '267 patent and recites the “same core concept.” D.I. 25 at 6. The other claims of the '267 patents merely recite “generic components used for their conventional purpose.” *Id.* Defendants also argue that claim 10 of the '267 patent “is

representative of the other Asserted Patents because the claims of all the Asserted Patents rely on these same essential steps with only slight variations based on other generic components used for their conventional purpose.” *Id.*; *see also id.* at 7-8.

Wireless Discovery disagrees and argues that the other claims have “different concrete and technical elements and steps requiring separate patentability analysis.” D.I. 30 at 3. For example, Wireless Discovery argues that claim 10 of the ’875 patent “requires a unique device hardware identifier which is not a feature of the [’]267 [p]atent claims.” *Id.*⁴ During oral argument, Wireless

⁴ Claim 10 of the ’875 patent recites:

10. A method comprising:

providing, via a computing device, accessible through any of an internet connection and a mobile telecommunications provider network, access to stored user profile information about a first user using a respective first mobile communications device and a second user, using a respective second mobile communications device;

receiving, via the computing device, indications of the locations of the first and second mobile communications devices;

receiving, via the computing device, a unique device hardware identifier from all communications devices from all users linked in a social network to associate with profiles and authenticate when users sign in to a user account;

sending, via the computing device, to the second mobile communications device, an invitation to accept any of an invitation to connect and personal attribute information from, or share personal attribute information with, the first user, upon receipt of permission from the second user to receive personal attribute information about, or share personal attribute information with, the first user; and

connecting, via the computing device, the first user and the second user through the computing device for personal communication between first user and the second user, the personal communication comprising one or more SMS, E-mail, chat/instant messaging, multimedia, voice or video,

wherein the computing device is configured to locate information about the second user from a social network file of the second user, and transmit this information to the first mobile communications device, and

Discovery argued that claim 10 of the '875 patent's recitation of a unique device hardware identifier provides a "hardware solution[]." *See* Tr. 27:10-19. Wireless Discovery also notes that claim 1 of the '267 patent "requires a computing device that permits discoverable members to have their respective devices turned on or off," which is not recited in claim 10 of the '875 patent. D.I. 30 at 3.

For the other asserted patents, Wireless Discovery states, "[t]here are additional examples of differences in the claims of each of the Asserted Patents that for purposes of brevity are not all identified here, but can be seen in the attached Exhibit I." *Id.* Exhibit I is a table that lists one independent claim from each of the asserted patents. *See generally* D.I. 30-2. Even with the attachment of Exhibit I, Wireless Discovery fails to describe *what* additional concrete and technical elements the other claims recite that would require the Court to conduct a separate patentability analysis. Wireless Discovery fails to "present any meaningful argument for the distinctive significance of any claim limitations not found in the representative claim." *Berkheimer*, 881 F.3d at 1365 (citations omitted).

The Court is not convinced by Wireless Discovery's arguments that the other claims of the asserted patents have different concrete and technical elements and steps requiring separate patentability analysis. The unique hardware identifier and turning on and off functionality are just generic components used for their conventional purpose. Wireless Discovery also has not proven that there are meaningful differences between claim 10 of the '267 patent and any claim of the

wherein the first and second users are members of a same social network, and the computing device is operable to disclose social network attributes such as a picture, name, and a location of first and second users in the vicinity or within a particular distance from one another for the purpose of connecting members.

D.I. 17-5 at claim 10.

asserted patents. Thus, the Court finds claim 10 of the '267 patent is representative of all claims, because it is substantially similar and directed to the same idea as the other claims in the asserted patents.

b. *Alice* Step 1

The Court must first determine whether the asserted patents are directed toward a patent-ineligible concept. The Court finds claim 10 of the '267 patent is directed to the abstract idea of social networking, such as matching people by their location. Defendants include the below table in their briefs, which summarizes how claim 10 of the '267 patent is directed to an abstract idea.

Claim Language	Claimed Idea
10. A method comprising:	
using a computing device to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members;	Linking mobile devices
communicatively linking a first mobile communications device to said computing device; communicatively linking a second mobile communications device to said computing device;	Linking mobile devices
using said computing device to provide access to stored user profile information about a first user and a second user;	Accessing membership data
using said computing device to store static locations of members and receive information identifying current dynamic locations of all members in said network;	Using user location
using said computing device to calculate and determine a proximity of user locations;	Determining user proximity
using said computing device to send to said first user upon inquiring of other members in said network of said first user, personal attributes of all other members based on proximity calculations to select members that said first user may wish to connect with, and to send to said second mobile communication	Exchanging member information and sending invitations to connect

device an invitation on behalf of said first user for said second user to accept connecting with said first user;	
using said computing device to communicatively connect said first user and said second user;	Exchanging member information
using said computing device to locate information about said second user from a social network storage file of said second user, and transmit this information to said first mobile communications device, wherein the first user and the second user are members of a same social network, and the computing device is to disclose non-anonymous social network attributes including a picture, name, and location of the first user and the second user in a vicinity or within a predetermined distance from one another for the purpose of connecting members of the same social network based in part on proximity calculations between connecting members;	Connecting members for communication
using said computing device to permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by said first user; and	Allowing offline connecting
using said computing device to permit said discoverable members to have their respective devices unconnected to an internet connection service at said time of the search being conducted by said first user,	Allowing offline connecting
wherein any of turned off devices and disconnected devices is discoverable by said computer device as said internet connection service is configured to report said any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to said first user.	Allowing offline connecting

D.I. 25 at 9-10.

As evidenced above, claim 10 of the '267 patent is directed to the abstract idea of "simply exchanging information about people based on their location and membership in an organization."

D.I. 25 at 10. In other words, claim 10 of the '267 patent is directed to "the abstract idea of

automating the conventional establishment of social networks to allow humans to exchange information and form relationships.” *NetSoc, LLC v. Match Grp., LLC*, 838 F. App’x 544, 548 (Fed. Cir. 2020). Courts in this District and other districts have also found claims similar to claim 10 of the ’267 patent abstract. In *Jedi Technologies, Inc. v. Spark Networks, Inc.*, the court found patents related to the idea of “matching people based on criteria such as personality traits or location” abstract. No. 16-1055-GMS, 2017 WL 3315279, at *7 (D. Del. Aug. 3, 2017). Courts have also found “the basic concept of controlled exchange of information about people as historically practiced by matchmakers and headhunters” to be drawn to an abstract idea and claims directed to “[m]atching based on geographic location” abstract. *See Walker Digit., LLC v. Google, Inc.*, 66 F. Supp. 3d 501, 508 (D. Del. 2014) (first quote); *Perry St. Software, Inc. v. Jedi Techs., Inc.*, 548 F. Supp. 3d 418, 433 (S.D.N.Y. 2021) (second quote).

Claim 10 of the ’267 patent is no different than these cases. One of the objectives of the ’267 patent is to provide a method to “communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members.” D.I. 17-6 at 2:42-45; *see also* D.I. 17-5 at 2:4-7 (“a method that allows individuals to use their mobile phones to discover others by personal attributes ...[and] exchange information over the internet”).

Wireless Discovery argued during oral argument that the asserted patents are not directed to an abstract idea because they are directed to telecommunications network. *See, e.g.*, Tr. 36:1-7; 37:8-11. According to Wireless Discovery, the asserted patents add additional “hardware solutions” to allow communications between mobile devices. *See* Tr. 27:10-19. Thus, Wireless Discovery concludes that the claims of the asserted patents “are directed toward specific means

and methods that improve relevant technologies.” Tr. 31:1-6 (citing *McRO, Inc. v. Bandai Namco Games Am. Inc.*, 837 F.3d 1299, 1313 (Fed. Cir. 2016)).

The Court disagrees with Wireless Discovery’s argument that the claims are not directed to an abstract idea. In *McRO*, the Federal Circuit held the invention recited “specific rules” or algorithms for a computer to “achieve an improved technological result,” i.e., to produce “accurate and realistic lip synchronization and facial expression in animated characters.” *McRO*, 837 F.3d at 1313-16 (citation omitted). Claim 10 of the ’267 patent does not recite any specific rules or algorithms to improve telecommunications network, nor does claim 10 of the ’267 patent improve specific computer technology or solve specific computer problems. *See, e.g., Ancora Techs. v. HTC Am., Inc.*, 908 F.3d 1343, 1348 (Fed. Cir. 2018) (finding asserted patent directed to improving security against a computer’s unauthorized use of a program non-abstract because the asserted patent improved computer functionality and was “done by a specific technique that departs from earlier approaches to solve a specific computer problem.”). Claim 10 of the ’267 patent does not describe a specific technique that departs from earlier approaches to solve a specific computer problem. The claims recite purely functional steps related to the abstract idea of exchanging information about people based on their location and membership in an organization.

For the above reasons, the Court finds claim 10 of the ’267 patent directed to the abstract idea of social networking. The Court must now proceed to *Alice* step two.

c. *Alice* Step 2

In *Alice* step two, the Court considers the elements of the claim, both individually and as an ordered combination, to assess whether “the limitations present in the claims represent a patent-eligible application of the abstract idea.” *Content Extraction*, 776 F.3d at 1347 (citation omitted). Merely reciting the use of a generic computer or adding the words “apply it with a computer”

cannot convert a patent-ineligible abstract idea into a patent-eligible invention. *Alice*, 573 U.S. at 223; *Versata Dev. Grp., Inc. v. SAP Am., Inc.*, 793 F.3d 1306, 1332 (Fed. Cir. 2015). “To save a patent at step two, an inventive concept must be evident in the claims.” *RecogniCorp, LLC v. Nintendo Co.*, 855 F.3d 1322, 1327 (Fed. Cir. 2017) (citation omitted).

The Court finds no saving inventive concept in claim 10 of the '267 patent. The asserted patents describe a social network system that uses “available technology and standard protocols available today,” including “a standard cell phone,” a “cellular phone network,” “existing standard Bluetooth technology,” and “Wi-Fi.” D.I. 17-5 at 2:31, 2:43-44, 2:50, 4:17-20, 11:45-46. Nothing in claim 10 of the '267 patent requires anything other than “off-the-shelf, conventional computer, network, and display technology for gathering, sending, and presenting the desired information.” *Elec. Power Grp., LLC v. Alstom S.A.*, 830 F.3d 1350, 1355 (Fed. Cir. 2016). Claim 10 of the '267 patent recites the use of generic components such as “a computing device,” “network,” and “mobile communications device.” D.I. 17-6 at claim 10. The specification of the '267 patent also states that the invention can be implemented on conventional servers. *Id.* at 5:67-6:11 (“In certain embodiments, communication between the member’s mobile devices and the server goes through a BTS 403, and communicates according to a packet-based telecommunications protocol such as GPS, 3G, 4G, LTE or any alternative data technology. In FIG. 1, communication links to/from mobile devices 400 and a network-based server 401 are provided; e.g., internet server, over a BTS 403 using standard communication protocols that provide separate facilities for transmission of digital data, or through wireless connection 404 capable of connecting the user to the internet.”). Claim 10 of the '267 patent “mere[ly] recit[es] a generic computer,” which is not an inventive concept that could “transform a patent-ineligible abstract idea into a patent-eligible invention.” *Alice*, 573 U.S. at 223. Claim 10 of the '267 patent fails to add “a technological improvement to

the computer or otherwise provide ‘something more’ to ‘transform’ the claims.” *NetSoc*, 838 F. App’x at 549 (citing *Alice*, 573 U.S. at 217).

Wireless Discovery makes several conclusionary statements that the asserted patents recite an inventive concept. *See* D.I. 30 at 4-7. Wireless Discovery states that the inventive concept of the ’267 patent is “easily exchanging contact and/or personal information over the internet for purposes of social interaction by way of mobile devices without limitations to hardware brands.” D.I. 30 at 4. Wireless Discovery’s alleged inventive concepts are merely rephrasing the abstract idea and saying it is an inventive concept, which is improper. *Trading Techs. Int’l, Inc. v. IBM LLC*, 921 F.3d 1084, 1093 (Fed. Cir. 2019) (“[t]he abstract idea itself cannot supply the invention concept, ‘no matter how groundbreaking the advance.’” (internal citations omitted)).

Additionally, “[a] claim that recites an abstract idea must include ‘additional features’ to ensure ‘that the [claim] is more than a drafting effort designed to monopolize the [abstract idea].’ Those ‘additional features’ must be more than ‘well-understood, routine, conventional activity.’” *Ultramercial, Inc. v. Hulu, LLC*, 772 F.3d 709, 715 (Fed. Cir. 2014) (citations omitted). Wireless Discovery fails to show how the alleged inventive concepts are more than well-understood, routine, or conventional. Tellingly, Wireless Discovery only cites to the specification in its brief, not to the claims, to support its bare assertions that the asserted patents recite an inventive concept. *See* D.I. 30 at 4-7. Wireless Discovery’s analysis is flawed because its conclusory statements about the asserted patents’ inventive concepts are untethered to the claim language of the asserted patents. *See ChargePoint, Inc. v. SemaConnect, Inc.*, 920 F.3d 759, 769 (Fed. Cir. 2019) (“The § 101 inquiry must focus on the language of the Asserted Claims themselves, and the specification cannot be used to import details from the specification if those details are not claimed.” (internal citations and quotation marks omitted)); *see also American Axle & Mfg., Inc. v. Neapco Holdings*

LLC, 967 F.3d 1285, 1293 (Fed. Cir. 2020) (“[F]eatures that are not claimed are irrelevant as to step 1 or step 2 of the Mayo/Alice analysis”).

Wireless Discovery also argued during oral argument that the asserted patents recite interactions that create a social network that is “manipulated to yield the desired result, allowing connection of devices without requiring hardware compatibility, a result that overrides any consideration that this is a routine and conventional sequence of events ordinarily encountered in forming a social network.” Tr. 40:5-11. The Court disagrees and finds the computer components recited in the claims are used for their conventional purposes. Claim 10 of the ’267 patent recites “establishing a social network on a computer,” which are “are quintessential ‘apply it with a computer’ claims.” *NetSoc*, 838 F. App’x. 544 at 548-49 (citation omitted).

For the above reasons, the Court finds no inventive concept that transforms claim 10 of the ’267 patent into a patent-eligible application of the abstract idea. Thus, the Court finds by clear and convincing evidence that claim 10 of the ’267 patent fails *Alice* step 2 and the ’875, ’362, ’267, and ’397 patents are invalid under § 101.

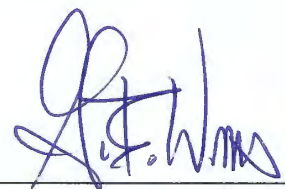
d. Wireless Discovery’s Request for Leave to Amend

Wireless Discovery also requests leave to amend its complaint “if the Court believes the teachings and citations from the patents-in-suit should be incorporated into the complaint.” *See* D.I. 30 at 19. When deciding a 12(b)(6) motion, a court considers “documents that are attached to or submitted with the complaint.” *Buck v. Hampton Twp. Sch. Dist.*, 452 F.3d 256, 260 (3d Cir. 2006) (citation omitted). Wireless Discovery attached to its complaint the asserted patents. D.I. 17-3, D.I. 17-4, D.I. 17-5, D.I. 17-6. The Court reviewed those patents when deciding the pending Motion. The claims of the patents say what they say. Amending the complaint would not change

the Court's § 101 analysis. Thus, Wireless Discovery's amendments would be futile, and the Court denies Wireless Discovery's request.

IV. CONCLUSION

Therefore, at Wilmington this 6th day of February 2023, **IT IS HEREBY ORDERED** that Defendants' Motion (No. 22-478, D.I. 24; No. 22-479, D.I. 25; No. 22-481, D.I. 27; No. 22-482, D.I. 25) is **GRANTED**.

A handwritten signature in blue ink, appearing to read "G. B. Williams", is written over a horizontal line.

GREGORY B. WILLIAMS
UNITED STATES DISTRICT JUDGE

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-
- (51) **Int. Cl.**
- | | | | | |
|-------------------|-----------|-------------------|---------|------------------------------------|
| <i>H04L 29/08</i> | (2006.01) | 7,346,855 B2 | 3/2008 | Hellyar et al. |
| <i>H04L 12/58</i> | (2006.01) | 7,353,462 B2 | 4/2008 | Caffarelli |
| <i>H04L 29/06</i> | (2006.01) | 8,472,874 B2 | 6/2013 | Tang et al. |
| <i>H04W 4/02</i> | (2009.01) | 8,606,854 B2 | 12/2013 | Serlet |
| <i>H04W 76/00</i> | (2009.01) | 2004/0009750 A1 | 1/2004 | Beros et al. |
| <i>H04W 84/18</i> | (2009.01) | 2004/0113807 A1 | 6/2004 | Amram et al. |
| <i>H04L 29/12</i> | (2006.01) | 2005/0026594 A1 | 2/2005 | Miller et al. |
| | | 2005/0076124 A1 | 4/2005 | Enderlein et al. |
| | | 2005/0193093 A1 * | 9/2005 | Mathew G06F 21/62
709/219 |
- (52) **U.S. Cl.**
- | | | | | |
|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------|--------------------------------------|
| CPC | <i>H04L 67/28</i> (2013.01); <i>H04L 67/306</i>
(2013.01); <i>H04W 4/023</i> (2013.01); <i>H04W</i>
<i>76/00</i> (2013.01); <i>H04L 51/38</i> (2013.01); <i>H04L</i>
<i>61/1594</i> (2013.01); <i>H04W 84/18</i> (2013.01) | 2005/0281237 A1 | 12/2005 | Heinonen et al. |
| | | 2006/0063548 A1 | 3/2006 | Kim |
| | | 2006/0234631 A1 | 10/2006 | Dieguez |
| | | 2007/0021111 A1 | 1/2007 | Celik |
| | | 2007/0167136 A1 | 7/2007 | Groth |
| | | 2007/0168425 A1 | 7/2007 | Morotomi |
| | | 2007/0242814 A1 | 10/2007 | Gober |
| | | 2007/0260751 A1 | 11/2007 | Meesseman |
| | | 2008/0051033 A1 | 2/2008 | Hymes |
| | | 2008/0108308 A1 * | 5/2008 | Ullah G06Q 30/02
455/41.2 |
| | | 2009/0209202 A1 * | 8/2009 | Martini H04W 12/02
455/41.2 |
- (56) **References Cited**
- U.S. PATENT DOCUMENTS
- | | | |
|--------------|---------|------------------|
| 7,249,182 B1 | 7/2007 | Heinonen et al. |
| 7,296,036 B2 | 11/2007 | Celik |
| 7,310,515 B2 | 12/2007 | Enderlein et al. |
- * cited by examiner

APPX096

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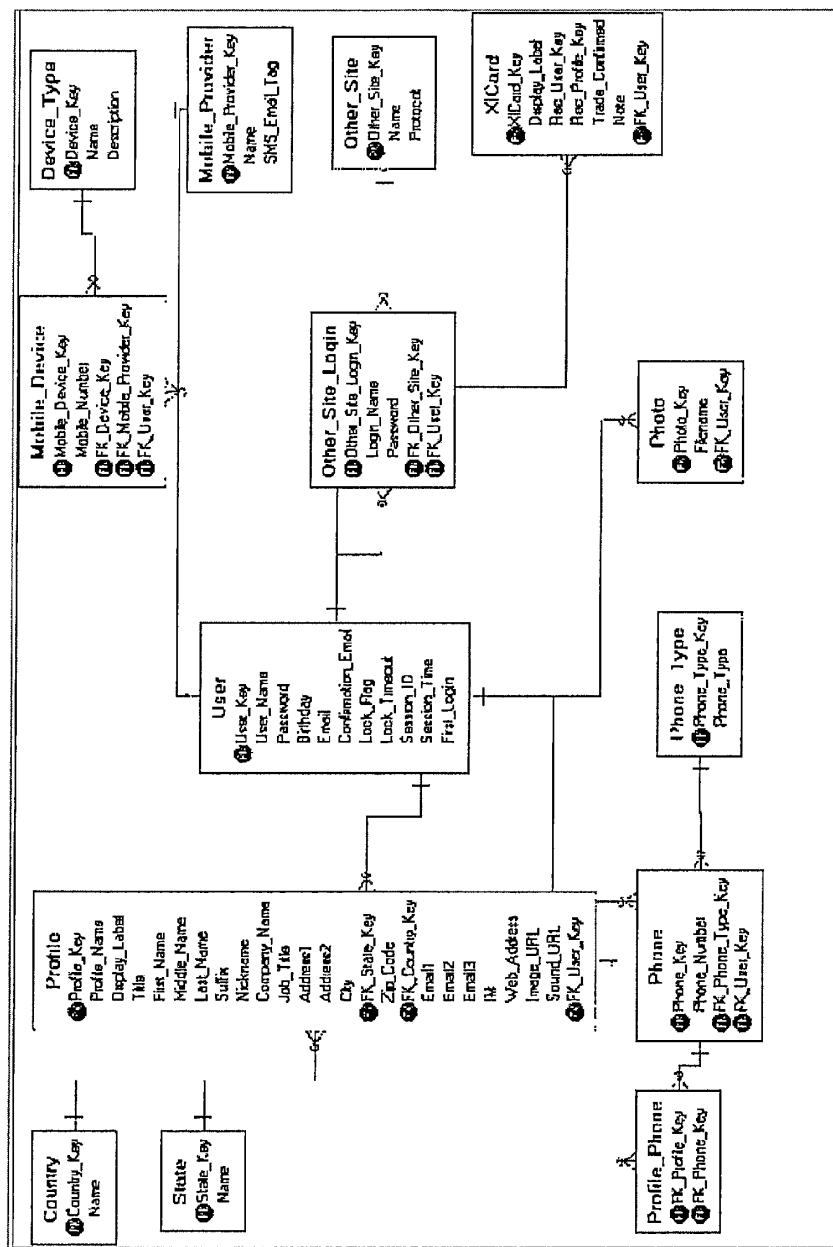
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FIG. 1

The screenshot shows a web browser interface with a toolbar at the top containing icons for Web Search, Bookmarks, FI Settings, Messenger, Mail, My Space, and Home. The page content includes a 'Join Us Today!' banner with a 'Sign Up Now!' button and a profile picture. Below this is a 'Create Xi Card' section with a 'Step 1' heading and a sub-header '(?) Required'. The main text reads: 'First Please Make sure your device is supported and included in our Mobile Device Type list'. The form fields are: 'Enter your name' (with sub-fields for First Name, Middle Name, and Last Name, each with a 'Select...' dropdown), 'Mobile Device Type' (with a 'Select...' dropdown), 'Mobile Service Providers' (with a 'Select...' dropdown), and 'Enter your mobile number' (with a 'Select...' dropdown). A 'Next' button is at the bottom right. The browser status bar at the bottom shows 'Done' and 'Internet | Protected Mode On'.

APPX097

FIG. 2



APPX098

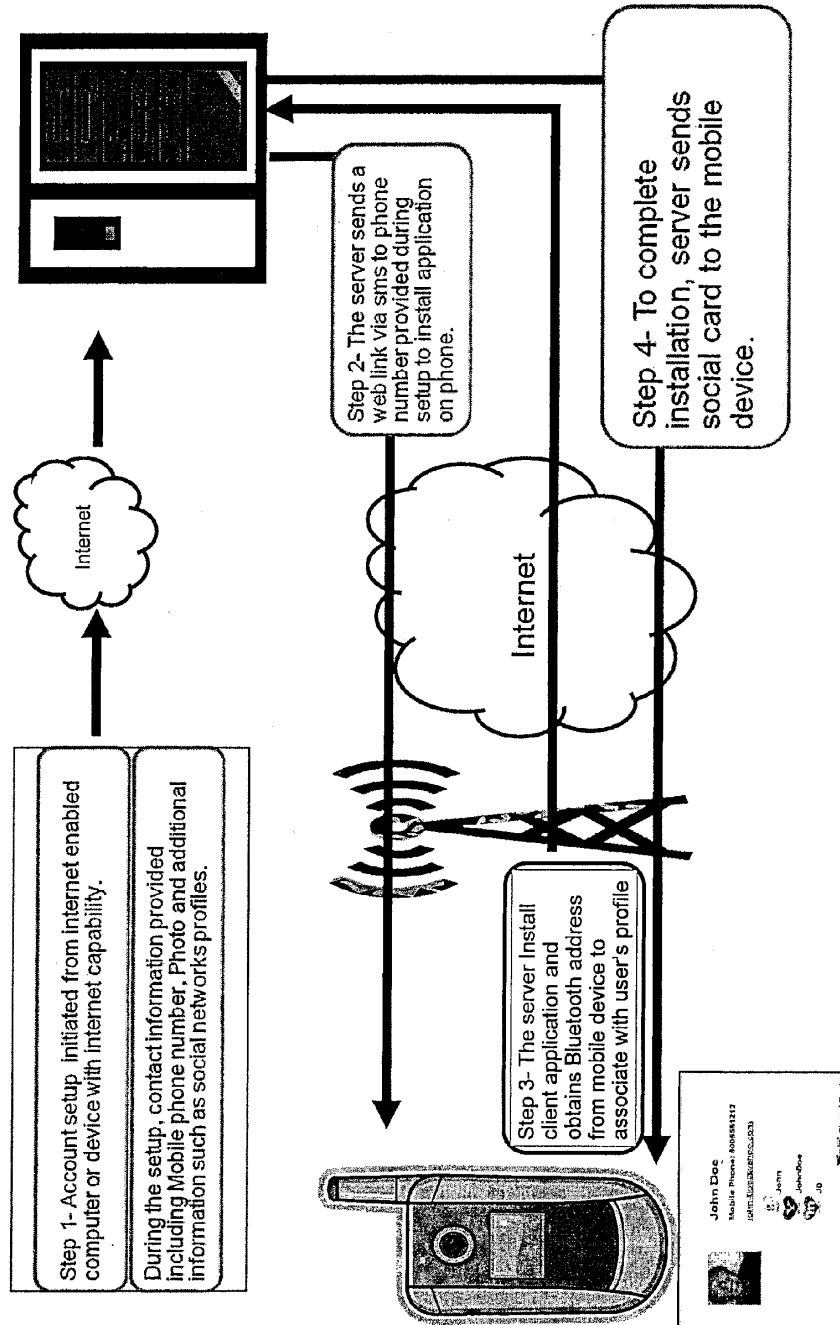
U.S. Patent

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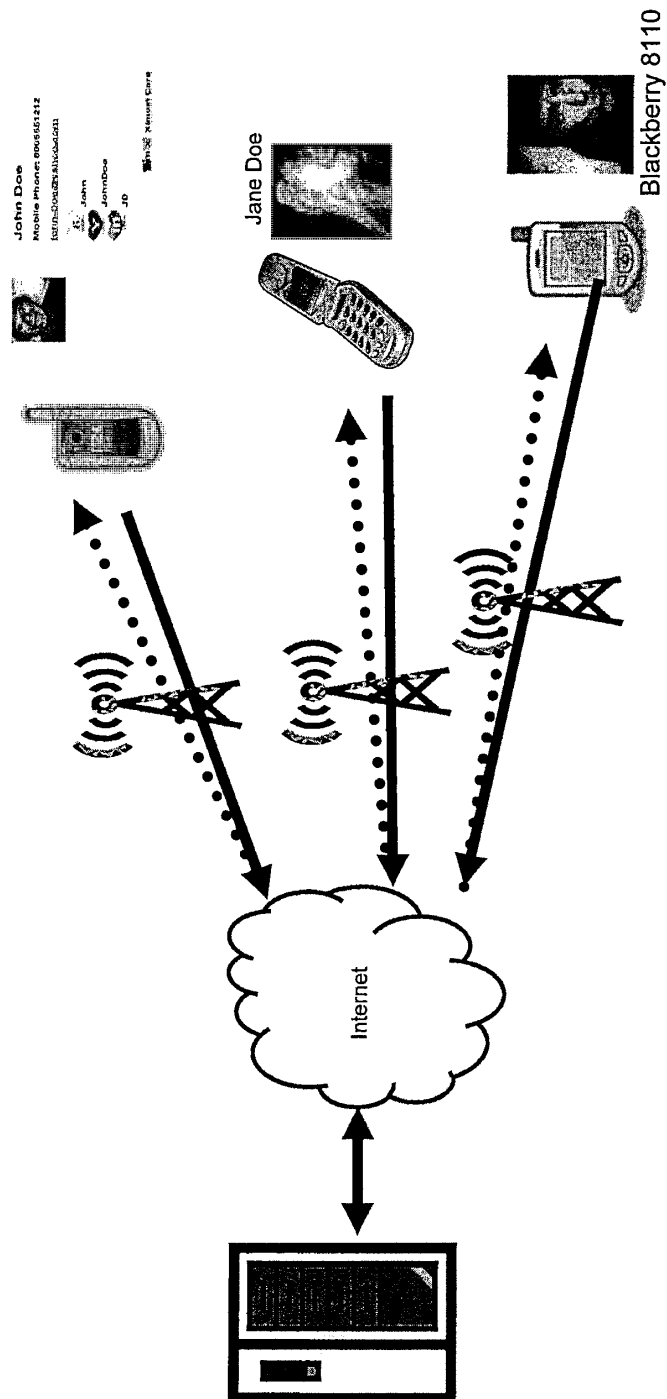
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FIG. 3



APPX099

FIG. 4



APPX100

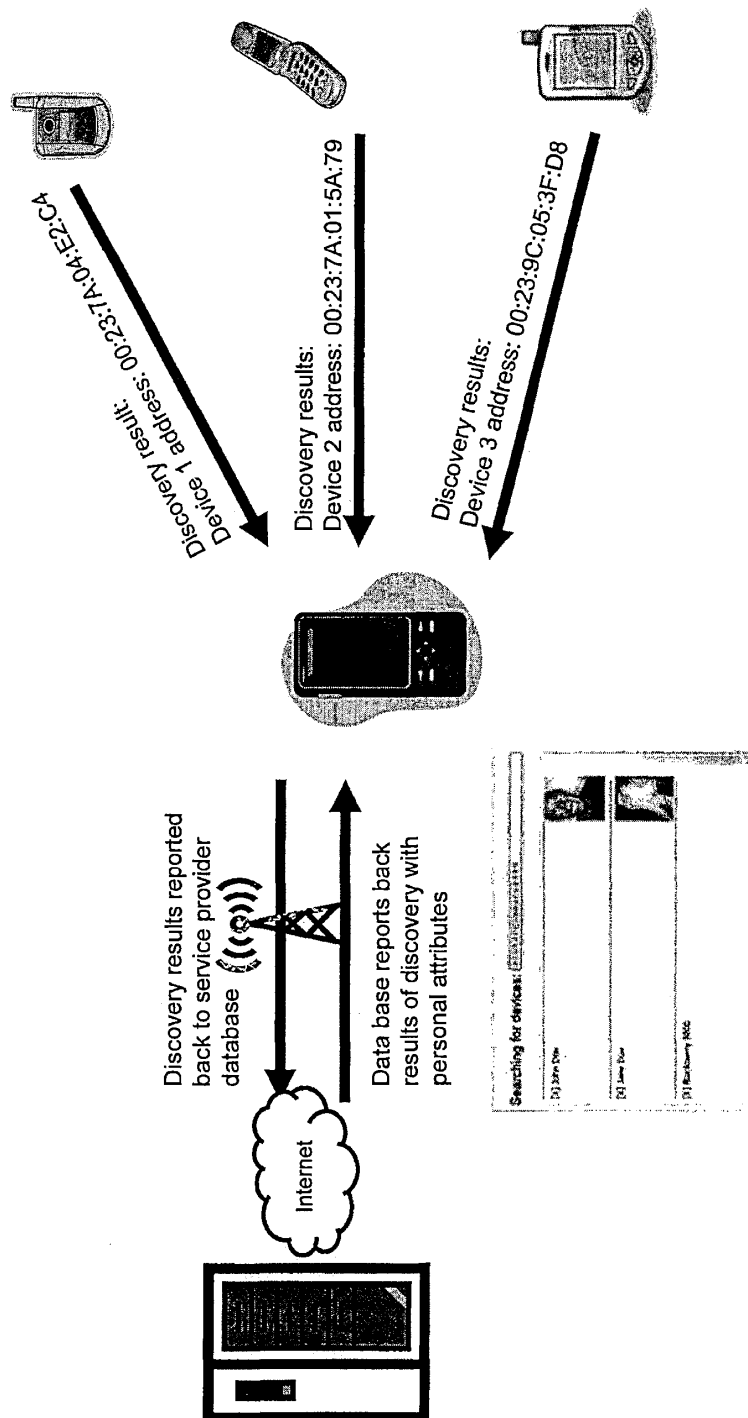
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FIG. 5



APPX101

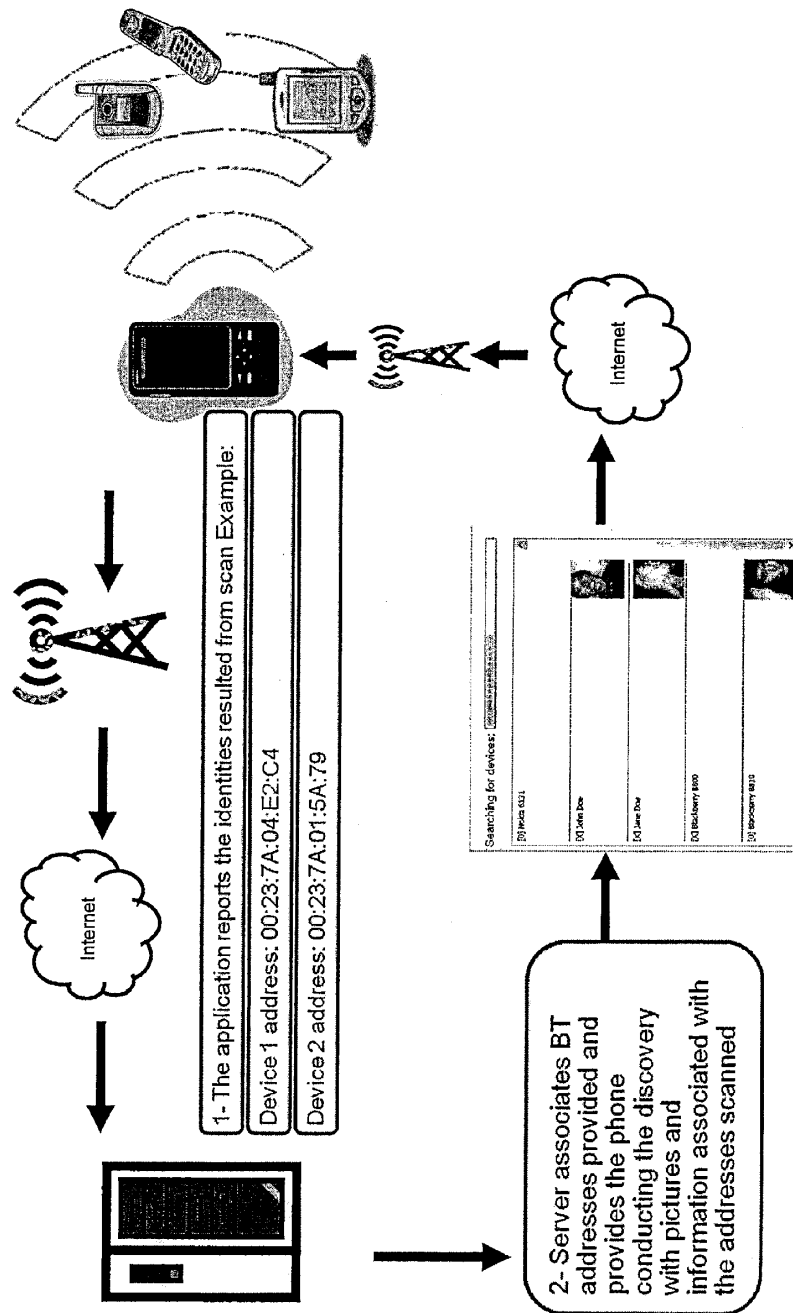
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FIG. 6



APPX102

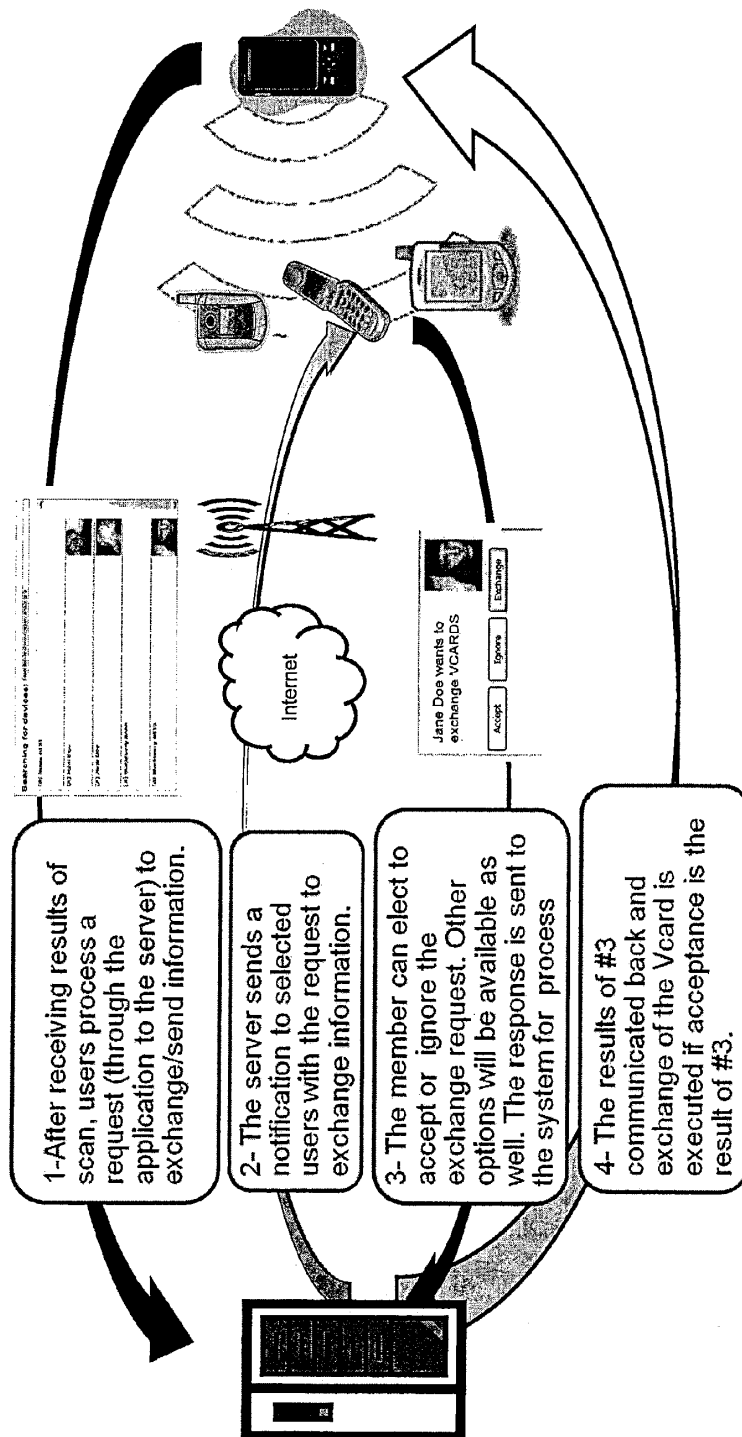
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FIG. 7



APPX103

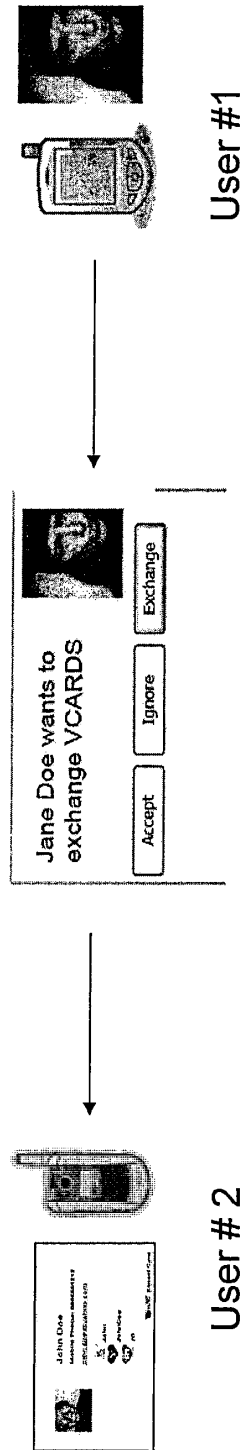
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FIG. 8



Users have the option of Accepting, ignoring or exchanging contact information.
 -Accept means that the member elects to receive only the other user's information
 - Ignore is a rejection to the invitation.
 -- Exchange means receiving user #1 information and in return, send user #2 information.
 Other option to be available will include Broadcasting which is a blast of a user's personal card to all members in the vicinity through the same process.

APPX104

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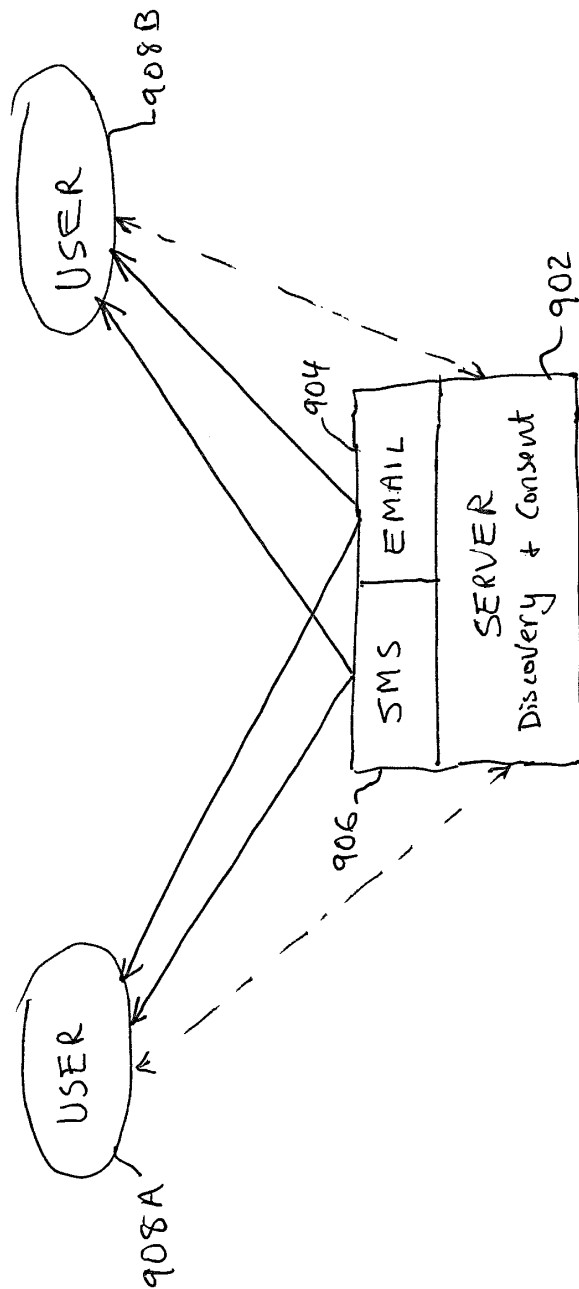


FIG. 9

APPX105

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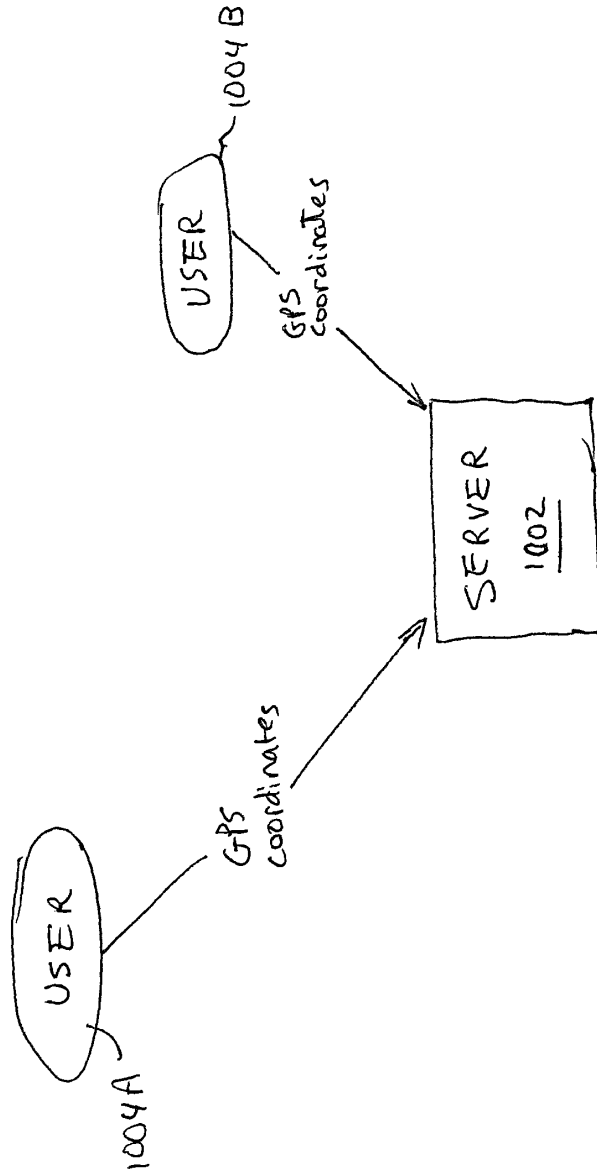


FIG. 10

APPX106

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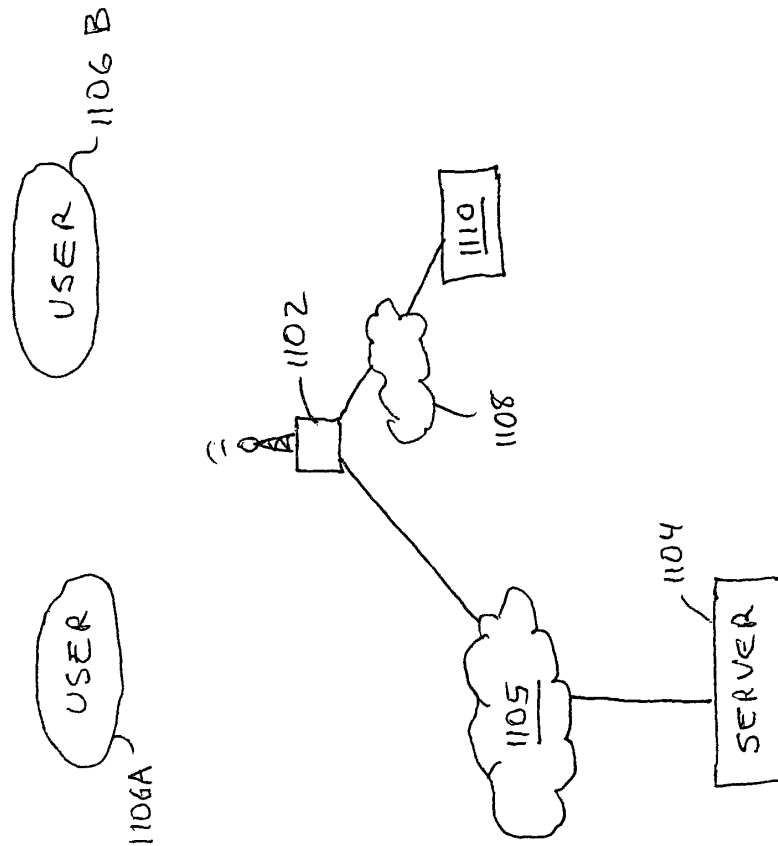


FIG. 11

APPX107

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Communication in both direction between mobile devices and server is through Cellular Base Transceiver Station (BTS) with standard that also provides separate facilities for transmitting digital data

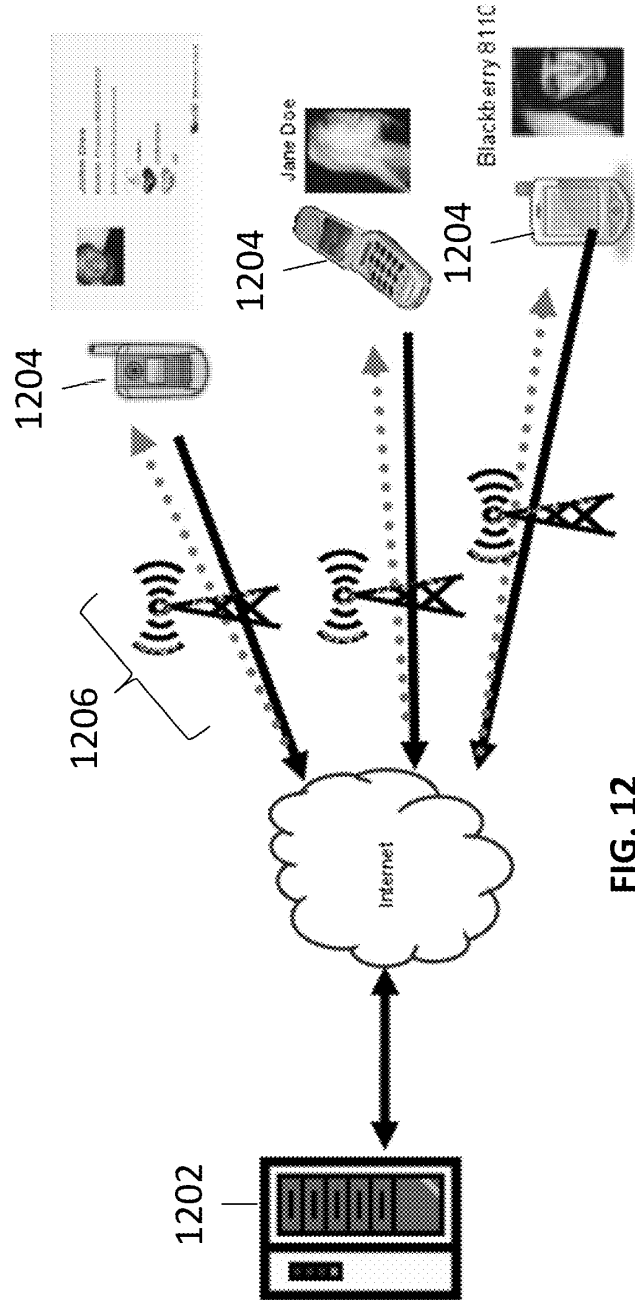


FIG. 12

APPX108

U.S. Patent

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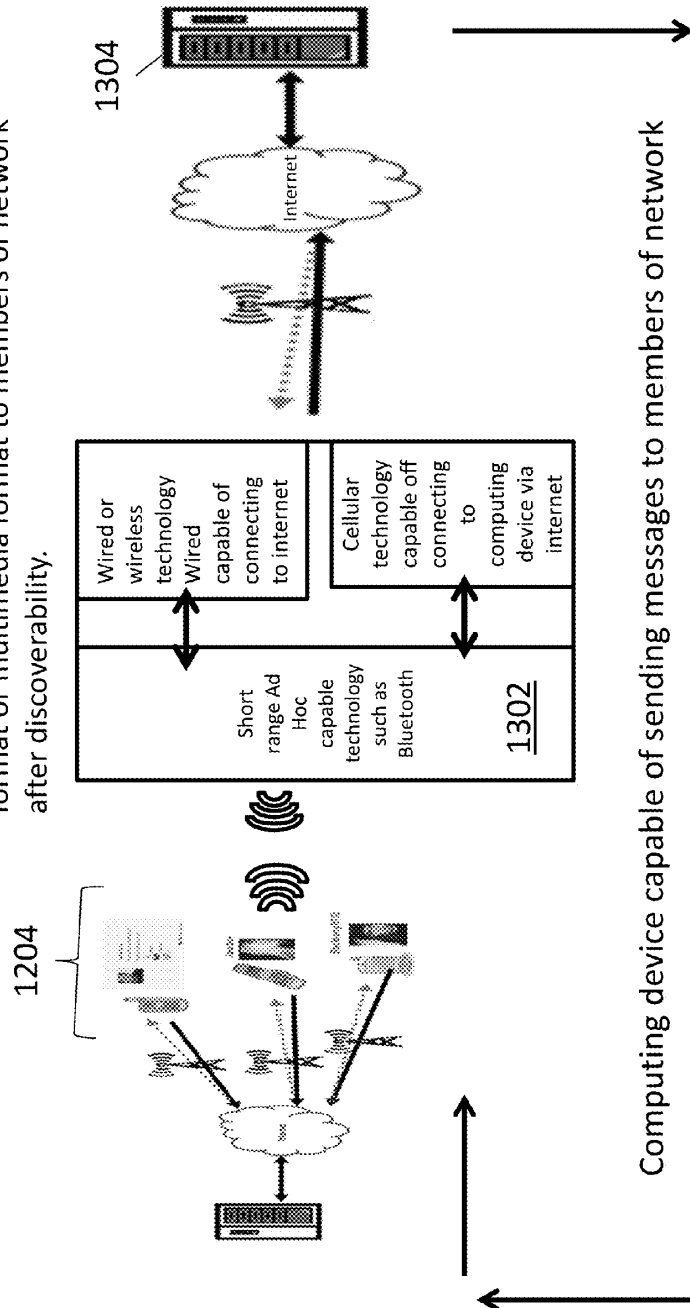
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Method of discoverability by device other than mobile of members in vicinity and identifying them by social and personal attributes

Computing device capable off sending messages in text format or multimedia format to members of network after discoverability.

FIG. 13

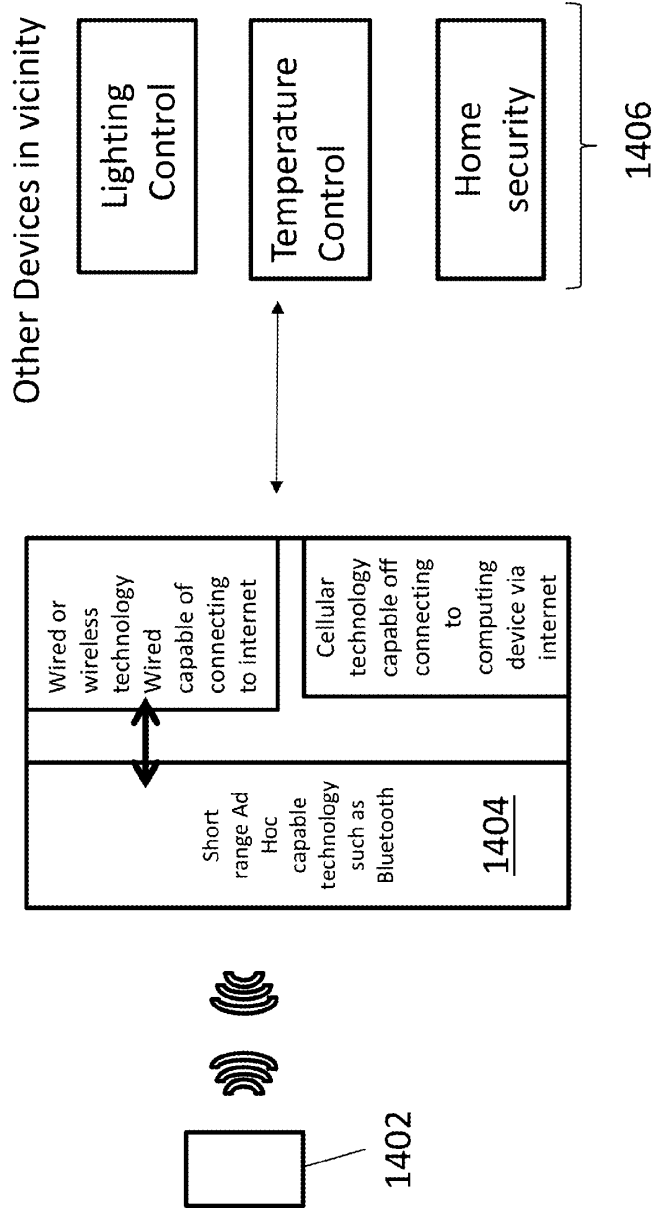


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- 1- Stationary Device 1404 detects user 1402 in vicinity
- 2- Stationary device components are wireless short range technology for detection + Computing device. Or wireless technology component that is connected wired or wirelessly to a computing device

FIG. 14

APPX110

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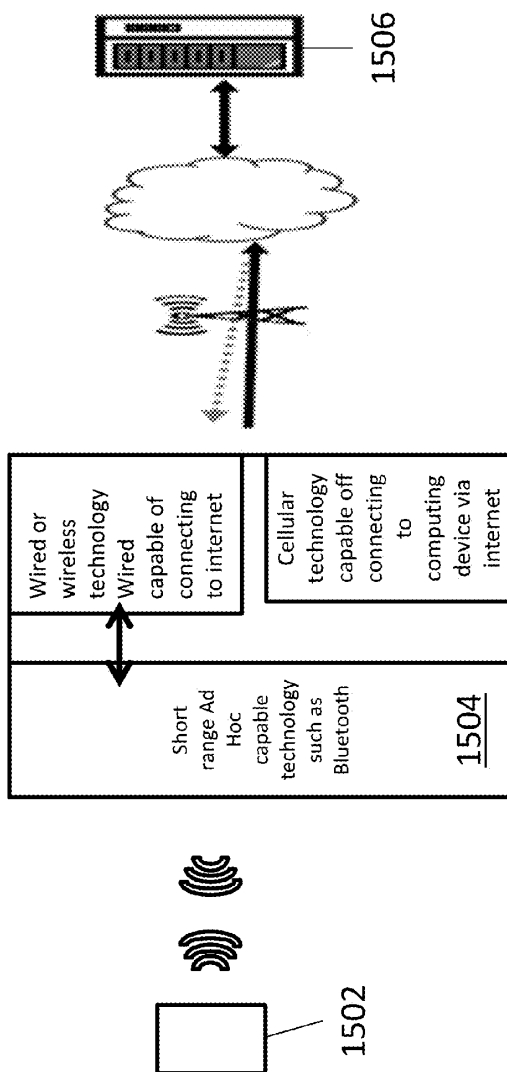


FIG. 15

- 1- Stationary device 1504 detects user 1502 in vicinity via short range ad hoc signal.
- 2- Stationary device 1504 components are wireless short range technology for detection + Computing device. Or wireless technology component that is connected wired or wirelessly to a computing device
- 3- Stationary device connected to sever 1506 via wireless signal to report 1502 presence.

APPX111

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1

LOCATION-BASED DISCOVERY OF NETWORK MEMBERS BY PERSONAL ATTRIBUTES FOR ALTERNATE CHANNEL COMMUNICATION

RELATED APPLICATIONS

This application is a continuation-in-part of U.S. application Ser. No. 12/351,654, filed on Jan. 9, 2009, which claims benefit to U.S. Provisional Application No. 61/010,891 filed on Jan. 10, 2008, the contents of which are incorporated by reference herein in their entirety.

FIELD OF INVENTION

The invention relates to discovering members of a social network by associating their personal attributes to the mobile device for the purpose of exchanging information using mobile communication devices and, in particular, exchanging personal information between one or more mobile communication devices.

DESCRIPTION OF RELATED ART

In light of the explosive use of mobile devices, social networks and email addresses, individuals are in need of the ability to exchange customized information such as pictures, social network profiles, emails and phone numbers using their mobile devices.

There are methods to exchange contact information in the form of Vcards. But there is no form of communication using mobile devices that allows discovery by personal attributes for the purpose of exchanging contact information. Furthermore, there is no available technology adapted for allowing mobile device users to easily exchange contact and/or related personal information over the internet for the purpose of social interaction by way of mobile devices.

Some available methods for contact information exchange do not provide discovery by attributes. Rather, these methods assign pin numbers to individuals or offer discovery by a mobile class or mobile ID. Typically, these systems require a user to operate under a common telecommunication service provider operated network. Other methods are based on Bluetooth technology in an ad hoc mode between two devices. These methods usually work only on the same brand mobile devices due to Bluetooth technology limitations, compatibility and security issues.

Communication between two Bluetooth-enabled devices typically requires entering a passkey or security code to allow pairing or communication between any two devices. This desire for maintaining security/privacy, inherent in the design of existing Bluetooth-enabled devices, such as a Smartphone, has imposed undesirable limitations on mobile device users who wish to interact with each other in a social setting.

Other alternatives available for contact information exchange such as Beam technology permit the exchange to take place between similar mobile devices using an infrared signal. This particular solution is, however, limited. For example, it requires a line-of-sight between the devices and does not offer the ability to exchange information such as pictures as a personal attribute and limits the use to a similar brand of hardware transmitting in an ad hoc mode.

U.S. Pat. Nos. 7,454,004; 7,450,966; 6,868,451; 7,440,746; and 7,249,182 focus on contact information storage, retrieval, Bluetooth methods of profiles and exchange of contact information in an ad hoc method.

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SUMMARY OF THE DISCLOSURE

In certain embodiments, the invention is directed to a system and method that allows individuals to use their mobile phones to discover others by personal attributes, such as by photos and names, after which, the two parties can exchange information over the internet by bypassing the inherent limitations of existing Bluetooth technology, e.g., security/privacy limitations and compatibility issues that limit or prohibit ad hoc communication, such as when mobile devices of different brands attempt to communicate with each other. In another sense, where there is interference making it difficult to communicate via Bluetooth, WiFi, etc., there is a system disclosed that provides an alternative pathway, network, communication link, etc. available through a cellular phone network, Ethernet or similar wired or wireless connection that is available in the event the local ad hoc network becomes unavailable after initial discovery of an address or other unique identifier for a mobile device.

In one aspect, the invention provides a system and method that enables free discovery of others who also desire social interaction, but without being constrained by hardware compatibility issues inherent in mobile devices by different manufacturers. According to this aspect of the invention, mobile device users (or users) can offer to other, nearby users, their pictures or other information as part of a discovery process, save contacts received from other users, and keep contacts stored on a mobile device up to date by upload/download of personal information through a networked storage device, e.g., an internet-linked storage device accessible through a cellular phone network. The storage device can be configured to frequently push updates of a user's contacts to his/her mobile device. Additionally, the network link with the storage device may be configured to initiate an exchange of photos and other contact information (via access to the network storage) after initial discovery has occurred between users over a Bluetooth-enabled communication link, such as a Bluetooth user's Personal Area Network (PAN).

According to the invention, a process of discovery and exchange of contact information may provide the mobile device user (or users) with an experience of exchanging highly personal information with someone nearby, after that person has been discovered using existing standard Bluetooth technology, but without the need to reprogram or adapt a standard cell phone to permit exchanges of personal information over, e.g., a PAN, such as pictures or a VCard level of personal information. Thus, the invention offers the advantage of not being limited to similar mobile devices, and capable of being implemented on almost any type of mobile communication device, e.g., a standard cell phone, since the personal information exchange does not occur via direct communication between the mobile devices, although the user has this type of experience when socializing since there can be a nearly real time exchange of personal information with someone whom he/she has just discovered over a PAN, or a WiFi network, for example.

It should be noted that while the invention is described as implemented using Bluetooth technology and a Bluetooth-type PAN (Personal Area Network), this is for convenience only and it will be understood that the invention is not limited to Bluetooth, such as the Bluetooth Specification V 2.1+EDR (Enhanced Data Rate) or subsequent derivatives of Bluetooth specifications such as Bluetooth 4.1 and BLE "Bluetooth low Energy" and so forth. Other wireless technologies can be used, including, but not limited to, cellular technology, Wi-Fi, Wi-Max, IEEE 802.11 technology, radio frequency (RF) communications, Infrared Data Association (IrDA) compat-

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ible protocols, Local Area Networks (LAN), Wide Area Networks (WAN), and Shared Wireless Access Protocol (SWAP), and Personal Area Networks (PAN).

For purposes of explanation, the following definitions are adopted. A “requesting user” is the person or person(s) who, using a Bluetooth-enabled (that is, more generally, wireless-enabled, as defined above) mobile device, initiates a discovery process, e.g., search for other Bluetooth-enabled devices within a PAN, and a “discovered user” is the person or person(s) having a Bluetooth enabled device that are discovered by the requesting user.

In one example, two persons, a requesting user and discovered or discoverable user are members of a social network that allows the members to communicate with each other over the internet. The network includes a server that stores personal attribute information. A standard Bluetooth discovery process may be initiated by the requesting user. The discoverable user member is discovered, e.g., when the requesting user’s mobile device receives a Bluetooth address. Then this address is communicated to the server, and in response the server sends a picture and name, or other information, of the discoverable user to the requesting user. The requesting user’s next requests that the server transmit his/her customized invitation or electronic card to the now discovered user. The communication between requesting/discovered users may then proceed by accessing information located over network storage, thereby bypassing the limitations of communication using the Bluetooth protocol. The Bluetooth protocol, in this example, is used to locate someone nearby. But after this discovery, the requesting and discovered users thereafter communicate over the internet. The subsequent interaction may include an exchange of VCards or similar electronic coordinates, SMS or other forms of real-time communication that may be facilitated by the same service that connected the two users to each other, or by a third party service.

According to another aspect of the invention, there is a system and method that allows users of a social network, or more generally database service, to create custom social cards that include social profiles, emails, phone numbers and/or a picture as a personal attribute. In one embodiment, a custom social card associated with the discovered user may be received when a requesting user discovers another member of the service, rather than an uninteresting Bluetooth address or serial number. For instance, the social card may include a picture and a name, personalized icons or card designs, etc. Furthermore, the requesting user may collect a plurality of such social cards when there are many members of the service within the short range network or vicinity, or geographic area as defined by the user who is conducting the search. The social cards are received from the server in response to the requesting user’s mobile device uploading mobile device attributes associated with other members of the social network, group or service. If the requesting user elects to make contact with one or more of the members, he/she may send an invitation containing a picture of the requesting user with a personalized message intended to spark an interest in the discovered user. The discovered user may then respond by sending his/her own custom social card, or reject the invitation.

The system includes a network-linked storage facility that collects information provided by members of a group, e.g., members of a social network, along with personal attributes in a data base hosted by a centralized computer with internet connection. The system associates a member’s, e.g., phone ID to the member’s account/profile. The phone association takes place when the user downloads a client-side application

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which collects, among other things, a unique phone characteristic such as a Bluetooth address or serial number.

In accordance with one or more of the foregoing objectives, the invention may be implemented to allow mobile device users to discover other members of the same database service, e.g., a social network, within a vicinity covered by short range wireless networks such as Bluetooth but without being limited by the shortcomings of the Bluetooth or related short range telecommunication standards and/or related hardware incompatibilities. The members can elect to exchange or send personalized, intimate contact information over the internet after the users have discovered each other, thereby bypassing short range security/privacy barriers and/or hardware compatibilities between mobile communication devices from different manufacturers. Hence, the invention enhances and facilitates the sharing of contact information between mobile users. The invention leverages available technology and standard protocols available today such as Bluetooth technology and defined standards within the Bluetooth technology such as Vcard profile and OBEX.

As mentioned earlier, all of the presently known, existing technology for communicating over short range, e.g., infrared or Bluetooth, focus on pushing contact information from one device to another. According to another aspect of the invention, there is a bidirectional exchange of contact information allowing receiving and sending at the same time. There is no slave/master relationship, which is common to all current existing contact exchange technologies between mobile devices.

The invention fills a gap left by the existing standards and technologies when it comes to the actual discovery process and exchange of contact information over the internet by bypassing ad hoc communication and compatibility issues.

According to another embodiment a system for exchanging personal information between a first user and second user includes a server accessible through the internet, the server providing access to stored user profile information about the first and second users including personal attribute information and mobile device addresses; searching, using a first device, for the presence of other mobile devices within the vicinity of the first device using the short range communication protocol, whereupon discovery of a second device the first device receives a unique, identifying attribute of the second device the first mobile device sending from the first device to the server the received identifying attribute for the second device; the server sending to the second device, via the server, an invitation to accept personal information from, or share personal information with the first user, wherein the invitation includes a graphics file associated with the first user’s personal attribute information; and the second mobile device accepting or rejecting using the second device the invitation from the first device.

According to yet another embodiment a method for requesting an exchange of personal information using a mobile communication device comprises the steps of: searching for the presence of other mobile devices within a personal area network; receiving a mobile device attribute from one or more nearby mobile devices; and sending one or more of the received mobile device attributes to a server located on the internet, the server being responsive to receipt of the one or more mobile device attributes for transmitting personal information about a respective one or more persons associated with the mobile device attributes received by the server.

According to yet another embodiment, a system for exchanging information among members of a group, such as members of a social network service, includes an internet-based server having a registration portion. After a user has

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registered online with the service, the server downloads a client-side application to the mobile device. A registration process is complete when a user receives a copy of a customized social card. And the user may thereafter transmit his/her social card to devices identified over a local network, such as a PAN, or to devices in the vicinity whose location was reported to the server as being close to the first user; or in the geographic area specified in the first user search criteria; or reported in the users database as members in the same vicinity/address/geographical vicinity, wherein, in certain embodiments, those devices/users are also members of the social network of the searching user.

According to another aspect of the invention, there is a method for meeting people including discovering people, e.g., over an ad hoc network, personal area network, etc., viewing their pictures, names, or other personal information, and selecting one or more people to send an invitation. The invitation may take the form of a social card, VCard, or other manner of engaging another person in a social atmosphere, or even a business setting such as a meeting, trade show, conference, etc.

According to another aspect of the invention, there is a method for discovering a person over a first network, and then communicating with that person over a second network after obtaining an electronic coordinate, e.g., a Bluetooth ID address, of the person. The first network can be a Personal Area Network (PAN) and the second network can be a cellular phone network. The method may further include the step of selecting and exchanging information based on pictures received at each of two or more mobile devices based on a mobile phone ID indexing/cross reference at a network server. The mobile device users can be members of a service that operates/maintains the server. The method may further include contacting each mobile user by a message that is presented to the user by a picture displayed on, and selectable by a mobile phone, the picture being sent by a server responsive to a received mobile phone ID or Bluetooth address.

According to another embodiment, a server is capable of providing a communication between a first and second mobile phone user based on receipt of mobile phone identifier, the server communicating via a cellular phone network and the mobile device identifiers being discovered over a PAN or similar local ad hoc network. The server is capable of providing information to phones not capable of exchanging data via Bluetooth or the related ad hoc network communication protocol, and/or not connected to a cellular phone network via a common cellular phone network provider, or provider plan. In certain embodiments, unique ad hoc network identifiers comprising a Bluetooth device address, a WiFi address, or main component address such as IMEI which is the international Mobile Station Equipment identify are exchanged between the devices via the server.

According to another aspect of the invention, there is a method for discovering a person over a first, one-directional network, and then communicating with that person over a second, bi-directional network after obtaining an electronic coordinate, e.g., a Bluetooth address, of the person. The first network can be a Personal Area Network (PAN) and the second network can be a cellular phone network. The one directional network can conduct the discovery utilizing a communication medium having a master-slave relationship, as understood in the art, while the second network can operate by utilizing a network based storage for receiving and responding to requests to send or receive information from each side of the communication, e.g. bi-directional communication between a first and second mobile device.

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In accordance with certain embodiments, a system includes a discovery device connected to a short range wireless communication protocol through an ad hoc wireless network which is connected to local computing machine that is connected to the internet and providing connection to a server. The server is configured to communicate for detecting first user presence in vicinity through the discovery device and local computing machine, the first user using a respective first mobile communications device and the discovery device is equipped with short range wireless technology each capable of connecting to the server through an internet connection and each also connected to the short range wireless communication protocol through the ad hoc wireless network. The server is in communication with the internet, and configured to provide access to stored user profile information and preferences of the first user, respectively, including personal attribute information and a mobile communications device address. The server is configured to receive, from the first mobile communications device or from the discovery device, a received unique ad hoc network identifier for the first mobile communications device received, by the discovery device, from the discovery device in response to a search for users in vicinity using the short range communication protocol for the presence of the first mobile communications device on the ad hoc network. The server configured to receive, from the discovery device, the unique ad hoc network identifier of the first mobile communications device and to send to local computing equipment instructions based on user preferences. The local computing device is capable of connecting to other local devices via wireless signal and can control functions. Example of other wireless local devices that maybe connected to the local computing device would be a wireless light controller device, a wireless temperature controller device, and or wireless home security controller device, using the unique ad hoc network identifier, the server which is connected to the local computing device, confirms the first user identity and personal attributes. This can be a onetime event and requires that local computing device stores match between first user unique ad hoc identification, or can be a function required each time the local computing machine detects a unique ad hoc id identifier. Upon receiving confirmation of first user attributes, the local computing device can execute commands based on first user preferences such as instruct lighting device to turn on/off/dim or connect to temperature control device to adjust temperature.

In accordance with certain embodiments, a method includes providing, via a local computing device, accessible internet and connection to server, access to stored user profile information about a first user using a respective first mobile communications device, receiving, via the computing device, from the stationed discovery device, a received unique ad hoc network identifier for the first mobile communications device, received by the first mobile communications device from the discovery device using the short range communication protocol on the ad hoc network, sending, via the computing device, to the other controlling network devices in vicinity, using wireless network, instruction based on first user preferences.

In accordance with certain embodiments, a local device is equipped with short range wireless technology capable of searching for members of the social network in the vicinity and receive from mobile devices unique ad hoc identifier. The local device has wired or wireless connection to the internet and configured to connect to a server, or other service applications that has access to the server and the first user personal attributes. The local device is capable and programmed to perform regular timed searches for members in the vicinity.

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And upon identifying members such as First user, the discovery device cause the computing device to perform a method. In certain embodiments, the method includes connecting to the server via internet connection and reporting to the server the first user presence in the vicinity; connecting to other wireless devices in the vicinity to execute functions based on first user preferences such as unlock door, turn lights on, or adjust temperature.

In accordance with certain embodiments, a method includes the use of a computing device that is capable of reporting to the server that specific function were indeed executed based on first user preferences and the server can update profile information accordingly, and may or may not share this information about the first user presence and functions executed to other social network members who are connected to the first user.

In accordance with certain embodiments, a device that is equipped with short range wireless technology, and computing capabilities and is capable of connecting to the internet via a wireless signal or mobile service, the device operable to detect user presence in its vicinity by obtaining a unique ad hoc identifier of the user in the vicinity, the device, upon detecting said user, operable report same to a computing machine to thereby cause the computing machine to:

provide through a wireless network or mobile telecommunications provider network, access to a stored user profile information about a first user by way of a first mobile communication device associated with the first user, and provide a wired or wireless connection to other devices in the vicinity of the first user to execute functions based on saved personal preferences of the first user.

According to certain embodiments, the executed functions are selected from a temperature adjustment, a light activation, or a door lock control.

INCORPORATION BY REFERENCE

All publications, patent applications or patents mentioned in this specification are herein incorporated by reference to the same extent as if each individual publication or patent application was specifically and individually indicated to be incorporated by reference.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 depicts a computer generated display for registering with a service. This service may provide a user with a network-based storage for personal contact information, creation of a custom social card to send to discovered, or requesting, users who are also members of the service, to provide personal contact information to other users and for accessing personal contact information of other users of the service. The service may be part of a social network.

FIG. 2 depicts a database schema/structure for maintaining personal information about a user (member) registered with the service. The information about the member may include, for example, his/her mobile device attributes such as the device key, mobile telecommunications provider; the mobile device type; the member's profile, e.g., name, address, etc.; stored photo(s) of the user; country/state where the member resides; and other information.

FIG. 3 is a flow chart associated with the creation of a social card for sending to requesting and/or discovered users.

FIG. 4 depicts communication links to/from mobile devices and a network-based server, e.g., internet server, over a Cellular Base Transceiver Station (BTS) using standard communication protocols that provide separate facilities for

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transmission of digital data. As depicted, the mobile devices may communicate by sending pictures of users associated with the device during a discovery process, as facilitated by the server.

FIG. 5 illustrates a discovery process flow chart between a requesting user and three discovered users.

FIG. 6 is a flow chart for a discovery process for associating unique, mobile device identifying attributes, e.g., Bluetooth addresses, with personal attributes between the requesting user and discovered users using information available from the network server. Each mobile device user is a member of the service and has personal contact information accessible through the server.

FIG. 7 is a flow chart depicting the processing of the requesting user's request to exchange information with the discovered users. In this example Jane Doe has selected one of the three discovered users after receiving the results of the scan, i.e., pictures and names of everyone within the discovery range, e.g., PAN, of Jan Doe's mobile device.

FIG. 8 describes additional aspects of notifications and responses to requests for exchange of electronics coordinates, or personal information from FIG. 7.

FIG. 9 is depicts establishment of communication between users, such as for example SMS, E-mail, chat/instant messaging, in the form of text or multimedia, video, etc., between consenting users.

FIG. 10 depicts an arrangement in which a server receives GPS coordinates from users, compares these coordinates to determine proximity, and informs the users of the proximity.

FIG. 11 depicts an arrangement relating to a process of ad hoc discovery of members between a mobile device and a discovery device that is capable of connecting via short range and connected to the network via Internet enabling technology wired or wireless.

FIG. 12 is directed to an arrangement in which a server/computing device 1202 communicates bi-directionally with user devices 1204 by way of a cellular base transceiver station (BTS) 1206 through a standard that also provides separate facilities (not shown) for transmission of digital data.

FIG. 13 is directed to a system and method of discoverability by a device other than the mobile devices of members in vicinity and identifying them by social and personal attributes.

FIG. 14 is directed to system and method in which a user/member 1402 is shown connected, via an ad hoc network, to a device 1404 equipped with short range ad hoc capable technology, such as Bluetooth.

FIG. 15 is directed to system and method in which a user/member 1502 is shown connected, via an ad hoc network, to a device 1504 equipped with short range ad hoc capable technology, such as Bluetooth.

DETAILED DESCRIPTION

According to one aspect of the disclosure, mobile device users sign up, or register with a service that enables the exchange of personal information through a network-based server. After a user provides mobile device information and a phone number, an internet-based centralized computer system (hereinafter "Server") sends to the mobile device a notification via SMS (Short Messaging Service). The SMS message, also known as a text message, alerts the new user to click on an internet link to install the service provider's client-side application on his/her mobile device. Of course other procedures for loading the client-side application onto the user's mobile device can be used, and the SMS message modality is not to be construed as a limitation.

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The user provides information by filling out an on-line profile, including uploading graphics or pictures. An example of a computer generated sign-up screen is shown in FIG. 1. Additional aspects of the registration process include creating a social card, which is intended to be sent to discovered users with whom the user wishes to communicate, and/or to a requesting user upon being discovered, e.g., via a Bluetooth communication protocol or the other technologies delimited above.

As mentioned above, the registration process also includes download of the client-side application (CSA); it resides on the mobile device, is enabled to communicate directly with the service, e.g., to synchronize/update addresses, access account information via username/password, or phone ID, send requests for information about users, send invitations, accept, exchange deny requests for exchange of information, obtain instances of the server addresses, etc. The registration process may be completed when the mobile device receives the customized social card through the resident CSA. Additional aspects of the possible functionalities of the client side application are provided below. Personal and other user information can also be added by way of the CSA for storage on the server, including hobbies, business associations, or personal information as examples. This and other information can also be added for storage on the server means other than the CSA, such as the user's personal computer, a dedicated kiosk, or other means for accessing the server through the internet.

Preferably, in order to take advantage of the functionalities provided by the service, the member of the service ("member") should have a mobile communication device that provides separate facilities (besides voice transmission) for transmitting digital data. This allows a mobile phone to act like any other computer over the Internet, sending and receiving data via the Internet Protocol. FIG. 4 illustrates how communication between mobile users and the Server is conducted. In certain embodiments, communication between the member's mobile devices and the server goes through a Cellular Base Transceiver Station (BTS), and communicates according to a packet-based telecommunications protocol such as GPRS, 3G or any alternative data technology.

Hereinafter the short range communication network used in the examples will primarily be described in terms of the Bluetooth standard. However, as explained above, it should be remembered that other forms of short-range communication may instead be used, e.g., WiFi.

One format for storing information about a user/member of the service is shown in FIG. 2. Depicted herein are some of the types of user information that may be stored and made accessible to the user at the server. Users may provide personal attributes such as name, address, and a picture. Information about the user's mobile device may include the make, model, and phone number.

The service provided to users may be operated/accessible under a centralized computer system ("server"), which may include three components: 1) Graphical user interface, providing an interface to members of the network to sign up, input/edit profile information, etc. 2) A scripting language designed for producing dynamic web pages such as PHP. This is a middle layer scripting that manages programming commands. 3) A comprehensive data base that includes user's information, for example as discussed above and shown in FIG. 2.

FIG. 3 is a flow chart depicting a process for registering with the service:

Step 1: Account set up and information provided through a web-based User Interface, e.g., such as shown in FIG. 1;

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Step 2: The Server sends an SMS with URL link for download of the CSA;

Step 3: The CSA collects characteristics from the mobile device such as a Bluetooth address for the purpose of associating the mobile device with a user account maintained at the Server. This association between a Bluetooth address and information in the associated user's account e.g., a photo, allows the display of interesting personal information such as a picture (as opposed to simply a Bluetooth address, device type, etc.) among members during discovery, such as depicted in FIG. 5. In this manner members can interact with each other in a way intended to facilitate social interaction, without being limited to only the information made available through existing, hardware independent and limited communication ability as adopted under the Bluetooth standard.

Step 4: To complete installation of the CSA, the server provides the mobile device with a copy of the member's social card and account information. Thereafter, the user may update, replace, revise the social card or personal attribute information, modify, hide or publish profile information (at the server) as contained in the user's contact information, e.g., the information contained in the user's Vcard which may be sent when the user accepts, or a discovered user accepts an invitation to exchange contact information.

Some of the other functions that may be included in the CSA are discussed below. As mentioned above, FIG. 5 illustrates how the Server may associate each mobile device with a member account of the service using a Bluetooth device ID address. During the installation process, the Server may send the CSA to the mobile device and also obtain from the mobile device its unique Bluetooth device ID address (BD_ADDR). Every mobile device with Bluetooth capability has a unique 48-bit address. The installed application sends the Bluetooth address to the server and associates the member with this particular mobile device. Example of an obtained BD_ADDR 48-bit would be: 00:23:7A:04:E2:C4. Alternative user device information can be for instance main component address such as IMEI which is the international Mobile Station Equipment identify.

As known in the art, a Bluetooth-enabled device permits the user to perform an inquiry to find other devices, located within the mobile device's PAN, to be connected to it via the Bluetooth communication standard and configured to respond to inquiries from the requesting user. However, the Bluetooth protocol only provides device name, ID address and/or device class, if requested. Communication between two devices over Bluetooth requires pairing or acceptance by its owner, but the connection itself can be initiated by any device and held until it goes out of range. The initial contact or discovery of another member according to the invention may be established by this standard form of communication. Once contact is made and the Bluetooth device ID address of the discovered user obtained, then personal contact information is received from the network-based service, as explained above, in response to the initial, identifying information about the mobile device. It should be noted that contact among users is not limited to this users within a PAN (personal area network). Rather, users within the vicinity of each other discovered using location-based services or other means can establish contact in the manner described herein.

Referring again to FIG. 5, the Bluetooth standard may be used to accomplish two tasks: First is to obtain a device address. Second, to perform an inquiry utilizing Bluetooth software layers and architecture. After these tasks are complete, all subsequent communications can be facilitated through the server, which may be via a bi-directional method of personal contact information exchange.

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As will be understood in light of the disclosure, a bi-directional method for exchange is capable of automating the process of data packet transfer and receipt from both devices reducing the time and human involvement required from both parties to cause the aforementioned processes according to the invention to occur. Thus, in one sense a bi-directional mode of communication may enhance the social experience because it gives the users a sense that the invitation, response and a follow-up exchange (if there is interest) is occurring in near real-time (e.g., as if the devices were actually communicating over a PAN). In the Bluetooth spec, the standard requires that one party is a master and the other party is a slave. All data exchange requires a push and/or pull between the master and slave. A bi-directional method identifies both parties as masters and the exchange is managed from both directions as both parties are communicating to a centralized computer system rather than directly. This bi-directional process can allow the users to process multiple requests through the server without waiting for a single process between two devices that can handle only one push or one pull at a time for example.

It will be appreciated in light of the disclosure that the bi-directional mode of communication method offers the advantage of facilitating an ongoing exchange between mobile device users. That is, the server can receive and send information simultaneously to both users, as opposed to a master-slave type relationship. Thus, in one sense this aspect of the invention may be thought of as providing master-master type communication protocol whereby each mobile device can send and receive information independent of the other mobile device. It will be understood that "master" in this sense does not mean or imply that only a Bluetooth protocol is necessarily contemplated.

Unlike communication using Bluetooth, which is limited by security constraints between paired devices (inherent in the Bluetooth standard), and/or related hardware compatibility issues between mobile devices, all of which are greatly limited in the kinds of information that may be exchanged using standard hardware/software platforms on mobile devices, the invention allows a user to essentially bypass these constraints so that a more personal interaction becomes possible using a standard mobile communication device, such as one equipped with Bluetooth or other protocols for wireless or wired communication. Wireless technologies for this purpose include, but are not limited to, cellular technology, Wi-Fi, Wi-Max, IEEE 802.11 technology, radio frequency (RF) communications, Infrared Data Association (IrDA) compatible protocols, Local Area Networks (LAN), Wide Area Networks (WAN), and Shared Wireless Access Protocol (SWAP), and Personal Area Networks (PAN).

It will be readily apparent that the invention provides a medium for near real-time exchange of contact information, unlike E-mail, SMS or other modes of communication between mobile devices. In this sense the user experience is enhanced over the exchange of E-mail or texting among phones, in at least three ways. First and most obviously, a requesting device is not limited to conversing with only members that he/she can contact through a known e-mail address, phone number, etc. Second, the exchange may proceed simply by initiating discovery and/or responding to a discovery request. Third, the exchange can occur among multiple members of a service at the same time.

Of course once consenting contact has been established between two or more users, other types of communication between them, for example SMS, E-mail, chat/instant messaging, in the form of text or multimedia, video, etc., can also be facilitated. This is depicted in FIG. 9. The centralized

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computer system ("server") 902 may include, or be associated with, an SMS server platform 904 or E-mail platform 906 that provides a corresponding channel of communication between the users 908A, 908B. The users are shown communicating directly with one another via SMS platform 904 and/or E-mail platform 906, facilitated by server 906.

FIG. 6 illustrates the discovery of the three discovered users from FIG. 5 using the requesting user's mobile device. The requesting user's resident CSA, upon receiving the three respective Bluetooth device ID addresses, i.e., addresses for device 1, device 2 and device 3, (the "addresses" may be broadly construed to include any unique identifier such as a Bluetooth device address, or unique identifier selected from a WiFi address, or main component address or an IMEI which is the international Mobile Station Equipment identify) sends this information to the network server via the cellular phone network. The server, after matching the discovered members' using the uploaded information, transmits back to the requesting user(s) mobile device a picture and name, or other information, for each of the discovered devices, which are then displayed on the mobile device's screen. The discovery process may thus include the showing of personal or intimate information that a member may wish to have displayed during the initial discovery step, rather than merely a device ID or address, device type, etc. At this point the requesting user has received a list of pictures and names which he/she can now select from the mobile device if further contact is desirable.

In one example, in a first step of the discovery process, a user scans the surrounding area covered by Bluetooth short range wireless signal, and obtains all Bluetooth addresses of members in the area. In the second step, the server associates all or some of these Bluetooth addresses with member profiles in the data base (each of which may contain the information described in FIG. 2) and provides the requesting user conducting the discovery with the results of the discovery in the form of personal attributes of nearby members including their pictures and names, which may be a social card for each of the members of the service. If a device address is not associated with a member of the service, the Server will report to the user conducting the discovery that the address as "Unknown" or provide generic information such as the device class or device name per Bluetooth standards.

FIG. 7 shows in further detail how users may discover each other, in four steps:

Step 1: The results of a discovery are provided to the requesting user, who receives personal attributes including pictures and names of four other discovered users. Four is not a limit and greater numbers of discovered users is contemplated. The requesting user (User #1) selects the one or more of the discovered users from the list (using functions available through the CSA) that he wishes to exchange contact information with. This request is received by the CSA, such as through the mobile device's touch-sensitive screen for selecting one or more displayed social cards or icons displaying a discovered user's picture and name (e.g., as shown in the drawings). Once the mobile device user selects one or more discovered users by screen, keypad, mouse, pen, etc., the CSA can then initiate automatic access information to the Server. From this point, the server proceeds to distribute the social card or other information to the selected discovered user(s). The distributed social card or other information can be preset, and/or it can be controlled by the discovering user during the instant session.

Step 2: The Server receives the request from User # 1 CSA, which in this case is a request to exchange or send contact information to User # 2 (and/or # 3, 190 4, etc). The Server sends a notification to User # 2 (and/or # 3, # 4) alerting her of

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User #1's request to exchange personal contact information. This alert is sent in the form of User # 1's custom social card providing personal attributes (including name and picture) and requesting User # 2 to either accept, ignore or exchange contact information.

Step 3: User # 2 informs the server with her choice of accepting, ignoring or exchanging contact information. This command, like the others issued by User # 2, is processed by the CSA on the User # 2 mobile device which engages in a two way communication with the Server via internet protocol for example.

Step 4: If the choice selected by User # 2 is exchange contact information, User # 2 will receive User # 1's customized social card. The CSA on User # 2's device obtains this information from the Server via the internet protocol. The information may be received in the form of Vcard and stored in User # 2's local, mobile device resident address book as well stored under User # 2's account in the Server's database. User # 1 can receive User # 2's customized social card in the same manner and the contact information may also be stored in User # 1's local, mobile device resident address book as well as stored under User # 1's account at the Server's database. If User # 2's choice was "ignore", then the CSA may send, via the internet protocol a rejection notification to User # 1. This may be in the form of an alternative customized social card for User # 2, or simply by a text message rejection. The third choice, "accept", causes the CSA on User # 2's mobile device to receive User # 1's information only, but not send her card in exchange.

The communication between the Server application and CSA are conducted via common standards such as HTTP (A protocol used to request and transmit files, especially WebPages and webpage components, over the Internet or other computer network). Communication between the CSA and Server may utilize the well known XML format (A meta-language written in SGML that allows one to design a markup language, used to allow for the easy interchange of documents over the World Wide Web).

FIG. 8 shows a further example of notification to discovered users alerting them to an exchange request. The notification shows other users' personal attributes including name and photo.

The server database may store any contact information exchanged and add it through a synchronization method with the client side application on the mobile device address book, if the user elects to store the information locally.

In other embodiments, the invention may be practiced using other short range wireless communication protocols such as WiFi or WiMax in lieu of Bluetooth if the mobile devices have chipsets that support such a wireless signal, as described above.

Associating the mobile device using Bluetooth information as described in connection with FIGS. 3, 5 and 6 may, in alternative embodiments, be accomplished with GPS (Global Positioning System) information association subject to ability to locate devices and associate them by location of cellular towers or chipsets.

In certain embodiments, the server can track locations of participating members, and report these locations to nearby members. Location tracking can be based on GPS and/or WiFi or other known protocols. In this manner, members who are not Bluetooth-enabled, or outside of Bluetooth or short range wireless signal can still be discovered and connected to other members who are close by. FIGS. 4 and 10 depict such an arrangement, wherein server 1002 (FIG. 10) is shown receiving GPS coordinates from Users 1004A and 1004B, comparing these coordinates to determine proximity, and

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informing the users of the proximity. Informing one user of another's proximity can be contingent upon consent of the users, as obtained above, and can be performed in gradations, for example initially sending limited information of one user to another, then increasing the delivered information and establishing contact depending on consent. In certain embodiments, the participating members report their locations to the server, for example periodically, and the server maintains a record of and updates these reported locations, and provides reports to certain users, for examples to those belonging to a common social network. User profiles of users who are connected can be updated to reflect this information by the server/computing device.

In certain embodiments, the CSA, residing on the mobile device, may have the following software functionality.

An "Authentication" portion requests authentication parameters from a user (ID or user login name and password); connects to an instance of server; sends user authorization information to the server side using ID or user name and password; displays a reason for denied access in case of incorrect login; and exits from the software in case of a preset number of incorrect logins; allows a user to change the password; and downloads profile information from the server.

A "Synchronize" portion retrieves a list of contacts from the server (getCard?cmd=all) and stores contents of the result set to the local address book (create new contacts and update existing contacts); periodically retrieves the list of pending and changed contacts from the server (updateCard?cmd=pending and getCard?cmd=changed) and stores contents of the result set to the local address book (create new contacts and update existing contacts); and scans the local address book for changes and new entries and sends those changes to the server.

Optionally, the service may connect to another social network database through APIs, which are application programming interfaces, to access other social network users attributes such as name and picture.

The methods of connecting and application programming interface would differentiate from one social network to another and be proprietary to the respective social networks. An application programming interface (API) is a set of routines, protocols, and tools for building software applications.

An API expresses a User Attributes such as name, picture and any additional information on the user. The API expresses as well the social network operations, inputs, outputs, and underlying types.

A "Bluetooth Exchange Contacts" portion allows a user to discover devices with the application installed nearby by Bluetooth; for the devices in which a client application is resident download limited information (name, title) and a picture; display the list of found Bluetooth devices with mentioning if a device from the list has a CSA running or not; allow a user to select devices from the list of found devices (one or multiple); allow a user to initiate the sending of his contact information, e.g., social card, to the selected devices; Send the user's profile to the selected device(s): If the CSA is running on the device then send the profile as profile including ID and picture; if a CSA is not installed or running on the device then send the profile as a VCARD (text/vcard MIME type); listen for inbound connections from clients; accept requests for brief information. Additionally, this module sends a partial contact information in response to a request; accepts requests for card exchange; ask a user for confirmation/send user confirmation back; accepts contact information and stores it locally; and sends own contact information.

In certain embodiments, the process of ad hoc discovery of members can be between a mobile device and a discovery

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device that is capable of connecting via short range and connected to the network via Internet enabling technology wired or wireless. Such an arrangement is shown in FIG. 11. The discovery device 1102 can be planted at a particular location—for example a convention center—and coupled wirelessly or by wireline to the computing device/server 1104, for example through a network 1105. The reporting device 1102 operates to discover users 1106A, 1106B who are in the vicinity, and report same to the computing device/server 1104. The computing device/server 1104 can then send users (1106A, 1106B) who were discovered in the vicinity short text message or multimedia message informing them of the presence of each other. The discovery device 1102 can connect through wireless or wired communication methods, potentially through a network 1108, to additional devices 1110 to execute functions based on the detected users of the network in the vicinity. Such functions can be based on user preference, and include “network of things” functionality, such as turning lights on or off, controlling thermostats to adjust temperature, locking or unlocking doors, and similar remote object control.

FIG. 12 is directed to an arrangement in which server/computing device 1202 communicates bi-directionally with user devices 1204 by way of a cellular base transceiver station (BTS) 1206 through a standard that also provides separate facilities (not shown) for transmission of digital data. Server 1202 is capable of offering services to the users associated with devices 1204, who may be members a social networking service, such as ability to chat with each other after discoverability, or exchange emails. The users/members can report their geographical position to the server/computing device 1202, and which is capable of reporting to other members the personal attributes, for example from the social network, of other members in the vicinity or beyond.

FIG. 13 is directed to a system and method of discoverability by a device other than the mobile devices of members in vicinity and identifying them by social and personal attributes. In FIG. 13 a device 1302 is equipped with short range ad hoc capable technology, such as Bluetooth, and discovers users/members 1204 of a social network. This is communicated to server/computing device 1304, which is capable of sending messages, for example in text format or multimedia format to discovered users/members 1204. Device 1302 may also be equipped with wired or wireless technology to be capable of connecting to the internet, and/or cellular technology capable of connecting to server/computing device 1304 via internet.

FIG. 14 is directed to system and method in which a user/member 1402 is shown connected, via an ad hoc network, to a device 1404 equipped with short range ad hoc capable technology, such as Bluetooth. Device 1404 may also be equipped with wired or wireless technology to be capable of connecting to the internet, and/or cellular technology capable of connecting to other devices 1406, for example via internet.

FIG. 15 is directed to system and method in which a user/member 1502 is shown connected, via an ad hoc network, to a device 1504 equipped with short range ad hoc capable technology, such as Bluetooth. Device 1504 may also be equipped with wired or wireless technology to be capable of connecting to the internet, and/or cellular. Device 1504 is connected to sever 1506 via wireless signal to report the presence of user/member 1502.

Having thus described at least one illustrative embodiment of the invention, various alterations, modifications and improvements will readily occur to those skilled in the art. Such alterations, modifications and improvements are intended to be within the scope and spirit of the invention.

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Accordingly, the foregoing description is by way of example only and is not intended as limiting.

The invention claim is:

1. A system comprising:

a computing device configured to allow communication between a plurality of members of a social network for any of connecting through said social network and exchanging personal information between a first user and a second user, the first user using a respective first mobile communications device and the second user using a respective second mobile communications device each operatively connected to any of a mobile telecommunications provider network and an internet connection to access said computing device;

the computing device in communication with said first user and said second user through said first mobile communications device and said second mobile communications device, wherein said computing device connects said first mobile communications device and said second mobile communications device to the internet using any of the mobile telecommunications provider network and a Wi-Fi connection;

the computing device configured to provide access to stored user profile information relating to said first user and said second user, respectively, wherein said stored user profile information comprises any of a picture, name, and location of a respective user;

the computing device configured to receive an inquiry from said first user about members in said social network who are close by in proximity to a current location of said first user to permit connection through said social network and for exchanging contact information between the users;

the computing device configured to return said inquiry by providing a user profile information of said members, wherein said user profile information comprises attributes comprising any of a picture, name, and location of a respective member, and wherein said computer device reports to said first user said attributes of all members who are close by in proximity to said current location of said first user;

the computing device configured to receive information identifying locations of the first user and cross reference with any of a location of said second mobile communications device, and locations of multiple users that are close by in proximity to said current location of said first user;

the computing device configured to receive a unique device hardware identifier from each mobile communication device from each linked member in said social network to associate and link to a respective member profile to authenticate said respective member as a linked member;

the computing device configured to determine proximity of the locations of the first and second mobile communication devices and other communication devices of other users to one another and to send to the second mobile communications device an invitation to connect to said first user or accept personal attribute information, or share personal attribute information with, the first user;

the computing device configured to provide services between users for personal communication, the personal communication comprising services including one or more of SMS, E-mail, chat/instant messaging, multimedia, voice, or video; and

the computing device configured to provide personal attributes comprising any of a picture, name, and loca-

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tion of members in a vicinity of one another to permit connections and exchange of contact information between said members,

wherein the first and second users are members of a same social network, and the computing device is operable to disclose social network attributes including a picture, name, and location of first and second users in the vicinity or within a particular distance from one another for the purpose of connecting members.

2. The system of claim 1, wherein the computing device is operable to provide any of the first and second user with social network attributes including pictures, names, location, and location proximity of all users in the social network in the vicinity or close by in proximity to any of the first and second user.

3. The system of claim 1, wherein the computing device is configured to receive an inquiry from the first user about other members of said social network who are close by in proximity to the first user.

4. The system of claim 1, wherein the computing device is configured to report to the first user social network attributes including pictures, names, and locations of all members of the social network who are close by in proximity to the first user.

5. The system of claim 4, wherein the computing device is configured to receive from the first user a selection of one or more additional users with whom the first user wishes to any of connect with through said social network and exchange social attributes.

6. The system of claim 5, wherein the computing device is configured to send to the first user social attributes such as a picture, name, and location of one or more of the selected additional users.

7. The system of claim 5, wherein the computing device is configured to obtain the permission of the selected additional users prior to said sending contact information or personal attributes or connecting members through said social network when user permission is required.

8. The system of claim 1, wherein the computing device is configured to update the profile information to indicate that the first and second users are connected.

9. The system of claim 1, wherein the computing device is configured to update the profile information to indicate that the first and second users are connected.

10. A method comprising:

providing, via a computing device, accessible through any of an internet connection and a mobile telecommunications provider network, access to stored user profile information about a first user using a respective first mobile communications device and a second user, using a respective second mobile communications device;

receiving, via the computing device, indications of the locations of the first and second mobile communications devices;

receiving, via the computing device, a unique device hardware identifier from all communications devices from all users linked in a social network to associate with profiles and authenticate when users sign in to a user account;

sending, via the computing device, to the second mobile communications device, an invitation to accept any of an invitation to connect and personal attribute information from, or share personal attribute information with, the first user, upon receipt of permission from the second user to receive personal attribute information about, or share personal attribute information with, the first user; and

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connecting, via the computing device, the first user and the second user through the computing device for personal communication between first user and the second user, the personal communication comprising one or more SMS, E-mail, chat/instant messaging, multimedia, voice or video,

wherein the computing device is configured to locate information about the second user from a social network file of the second user, and transmit this information to the first mobile communications device, and

wherein the first and second users are members of a same social network, and the computing device is operable to disclose social network attributes such as a picture, name, and a location of first and second users in the vicinity or within a particular distance from one another for the purpose of connecting members.

11. The method of claim 10, wherein the computing device is operable to provide the first and/or second user with social network attributes such as a picture, name, and location of all users in the social network in the vicinity or close by the first and/or second user.

12. The method of claim 10, wherein the computing device is configured to receive an inquiry from the first user regarding other users in the social network in proximity to a location of the first user.

13. The method of claim 10, wherein the computing device is configured to report to the first user social network attributes including a picture, name, and location of all members of the social network who are close by in proximity to the first user, and wherein the computing device is configured to provide personal attributes comprising any of a picture, name, and location of members in a vicinity of one another to permit connections and exchange of contact information between said members.

14. The method of claim 13, wherein the computing device is configured to receive from the first user a selection of one or more additional users with whom the first user wishes to any of exchange social attributes and connect with.

15. The method of claim 14, wherein the computing device is configured to send to the first user social attributes of one or more of the selected additional users.

16. The method of claim 14, wherein the computing device is configured to obtain permission of the selected additional users prior to said sending.

17. The method of claim 10, wherein the computing device is configured to update the profile information to indicate that the first and second users are connected.

18. The method of claim 10, wherein the computing device is configured to update the profile information to indicate that the first and second users are connected.

19. The method of claim 18, wherein the computing device reports a location of users by determining a proximity of said users to other users based on original location information entered during an initial registration process.

20. A non-transitory machine readable medium storing instructions that, when executed by a computing device, cause the computing device to perform a method, the method comprising:

providing, via a computing device, accessible through any of an internet connection and a mobile telecommunications provider network, access to stored user profile information about a first user using a respective first mobile communications device and a second user, using a respective second mobile communications device;

receiving, via the computing device, indications of the locations of the first and second mobile communications devices;

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receiving, via the computing device, a unique device hardware identifier from all communications devices from all users linked in a social network to associate with profiles and authenticate when users sign in to a user account; 5

sending, via the computing device, to the second mobile communications device, an invitation to accept any of an invitation to connect and personal attribute information from, or share personal attribute information with, the first user, upon receipt of permission from the second user to receive personal attribute information about, or share personal attribute information with, the first user; 10

and

connecting, via the computing device, the first user and the second user through the computing device for personal communication between first user and the second user, the personal communication comprising one or more SMS, E-mail, chat/instant messaging, multimedia, voice or video, 15

wherein the computing device is configured to locate information about the second user from a social network file of the second user, and transmit this information to the first mobile communications device, and 20

wherein the first and second users are members of a same social network, and the computing device is operable to disclose social network attributes such as a picture, name, and a location of first and second users in the vicinity or within a particular distance from one another for the purpose of connecting members. 25

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APPX121



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(12) **United States Patent**
Alharayeri

(10) **Patent No.:** **US 9,357,352 B1**
(45) **Date of Patent:** ***May 31, 2016**

(54) **LOCATION-BASED DISCOVERY OF NETWORK MEMBERS BY PERSONAL ATTRIBUTES USING DYNAMIC AND STATIC LOCATION DATA**

USPC 455/41.2, 412.2, 414.1, 426.1, 432.3, 455/434, 456.3
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,178,511 B1 1/2001 Cohen et al.
6,243,816 B1 6/2001 Fang et al.

(Continued)

FOREIGN PATENT DOCUMENTS

DE 10149496 A1 4/2003
EP 1450282 A2 8/2004
WO PCTUS0930756 1/2009

OTHER PUBLICATIONS

Malley, A., "Apple seeks distance-based pairing, auto contact data patents," Webpage: http://appleinsider.com/articles/08/09/27/apple_seeks_distance_based_pairing_auto_contact_data_patents, published on Sep. 27, 2008, 2 pages.

Primary Examiner — Christopher M Brandt

Assistant Examiner — Matthew Genack

(74) *Attorney, Agent, or Firm* — Rahman LLC

(57) **ABSTRACT**

A technique for allowing members of the same social network using mobile devices to discover others in the vicinity by personal attributes and in specific picture(s) and name for the purpose of connecting, and the ability to use functions provided by a social network such as SMS, e-mail, chat/instant messaging, multimedia, or video by using unique hardware identification of each member mobile device and personal login information that are stored in a network server computing device; and associating the unique apparatus of the members' hardware with the members' personal profile such that when a search is initiated between members, the results contain the members' profile's picture(s), name, location and additional information as stored in the profiles. The proximity of the users is determined by static or dynamic location of the actual device location identified through mobile radio frequency location technology and internet IP information and saved in the user profile.

32 Claims, 9 Drawing Sheets

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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(22) Filed: **Jan. 19, 2016**

Related U.S. Application Data

(63) Continuation-in-part of application No. 14/570,779, filed on Dec. 15, 2014, now Pat. No. 9,264,875, which is a continuation-in-part of application No. 12/351,654, filed on Jan. 9, 2009, now Pat. No. 8,914,024.

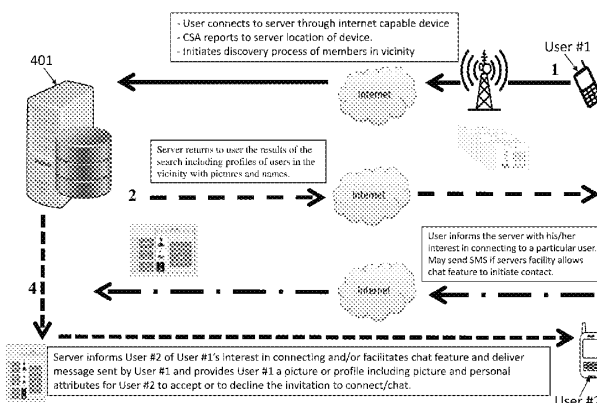
(60) Provisional application No. 61/010,891, filed on Jan. 10, 2008.

(51) **Int. Cl.**
H04W 24/00 (2009.01)
H04W 4/02 (2009.01)

(Continued)

(52) **U.S. Cl.**
CPC **H04W 4/025** (2013.01); **H04L 51/36** (2013.01); **H04L 67/12** (2013.01); **H04L 67/18** (2013.01); **H04L 67/306** (2013.01)

(58) **Field of Classification Search**
CPC H04W 4/02; H04L 29/08657



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-
- (51) **Int. Cl.**
H04L 29/08 (2006.01)
H04L 12/58 (2006.01)
- (56) **References Cited**
- U.S. PATENT DOCUMENTS
- | | | | | | |
|-----------------|---------|------------------|-------------------|---------|--------------------------|
| 7,249,182 B1 | 7/2007 | Heinonen et al. | 2005/0076124 A1 | 4/2005 | Enderlein et al. |
| 7,296,036 B2 | 11/2007 | Celik | 2005/0193093 A1 * | 9/2005 | Mathew G06Q 30/02 |
| 7,310,515 B2 | 12/2007 | Enderlein et al. | 2005/0281237 A1 | 12/2005 | Heinonen et al. |
| 7,346,855 B2 | 3/2008 | Hellyar et al. | 2006/0063548 A1 | 3/2006 | Kim |
| 7,353,462 B2 | 4/2008 | Caffarelli | 2006/0234631 A1 | 10/2006 | Dieguez |
| 8,472,874 B2 | 6/2013 | Tang et al. | 2007/0021111 A1 | 1/2007 | Celik |
| 8,606,854 B2 | 12/2013 | Serlet | 2007/0167136 A1 | 7/2007 | Groth |
| 2004/0009750 A1 | 1/2004 | Beros et al. | 2007/0168425 A1 | 7/2007 | Morotomi |
| 2004/0113807 A1 | 6/2004 | Amram et al. | 2007/0242814 A1 | 10/2007 | Gober |
| 2005/0026594 A1 | 2/2005 | Miller et al. | 2007/0260751 A1 | 11/2007 | Meesseman |
| | | | 2008/0051033 A1 | 2/2008 | Hymes |
| | | | 2008/0108308 A1 * | 5/2008 | Ullah G06Q 30/02 |
| | | | | | 455/41.2 |
| | | | 2009/0209202 A1 * | 8/2009 | Martini H04W 12/02 |
| | | | | | 455/41.2 |
- * cited by examiner

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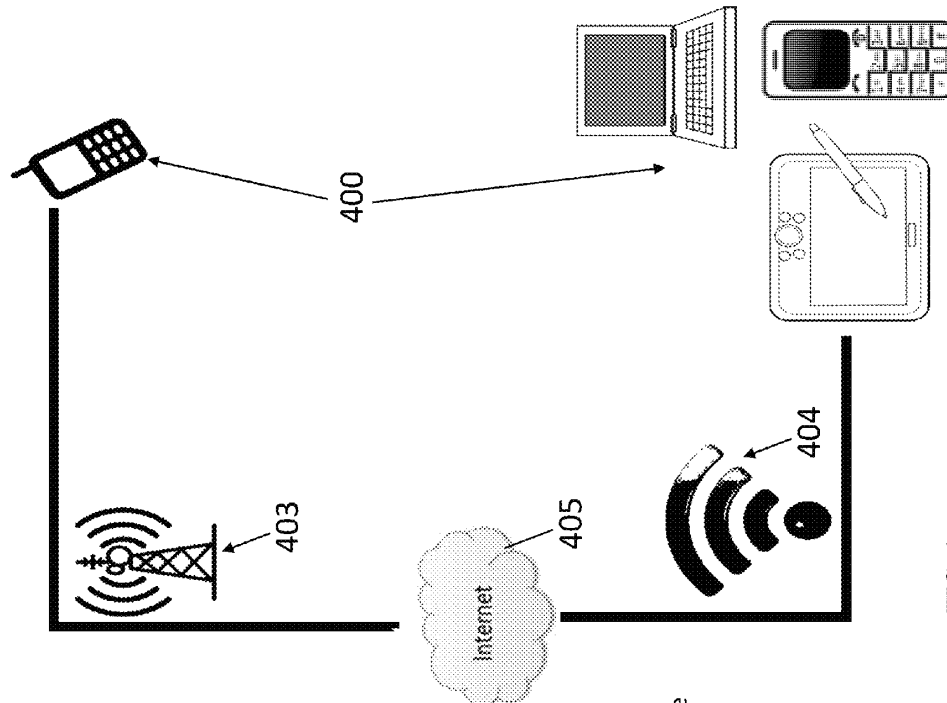
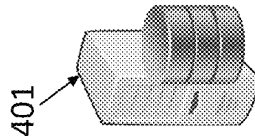


FIG. 1

Example of services and methods of connecting to the server via mobile CSA or internet web interface

Functions provided:

- Registration
- View/edit User Card/Profile
- Report dynamic position
- Search for members in vicinity
- Based on static or dynamic position
- Log in to see who viewed you
- Accept or reject invitations to connect
- Use features provided by service such as SMS or chat



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Enter name

Enter password

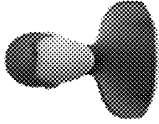
Enter email

Enter Phone number

Enter Address

Enter additional information: bio, job, introduction statement, personal summary, etc.

Optional: sign up using another social network credentials



Upload picture

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FIG. 2

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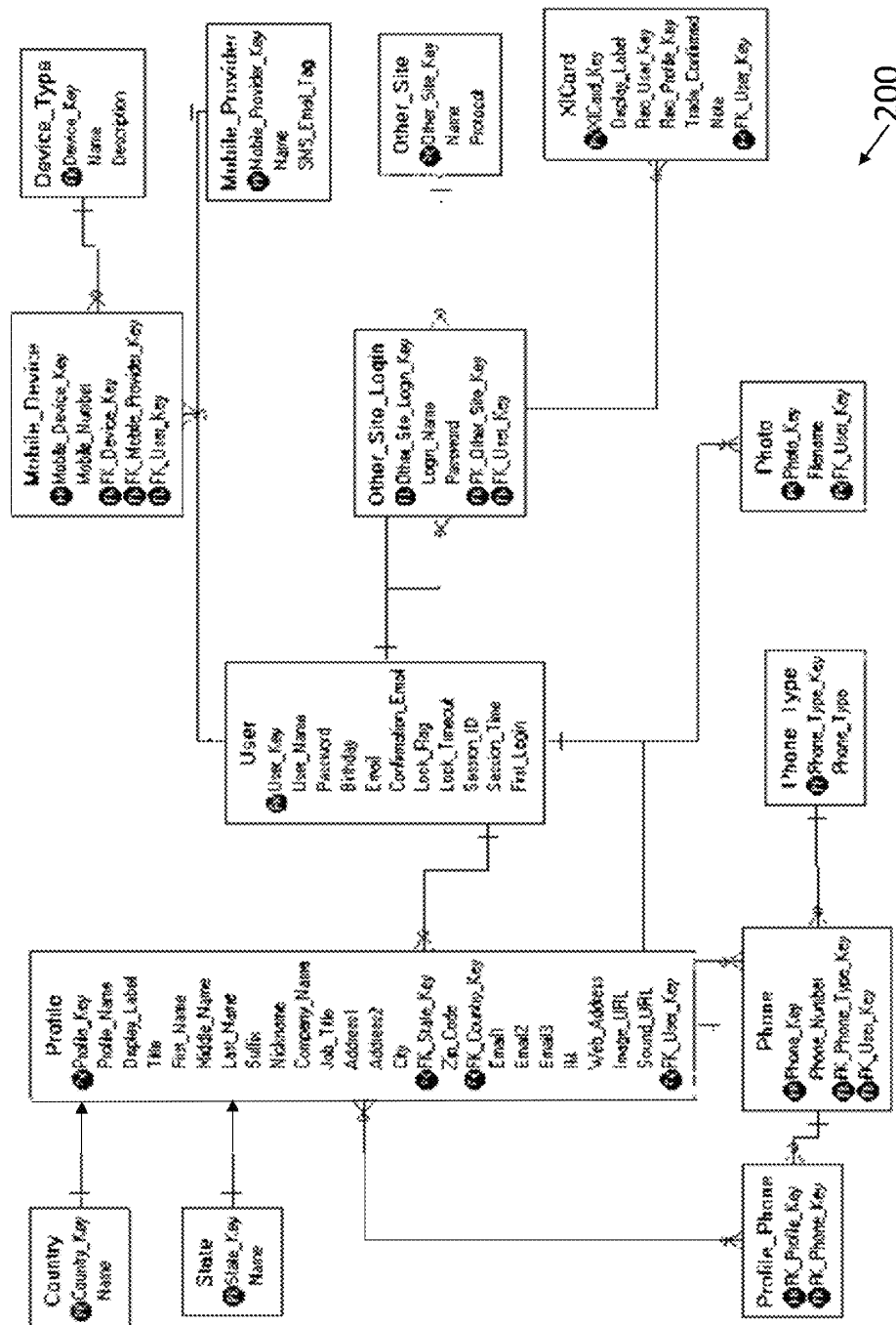


FIG. 3

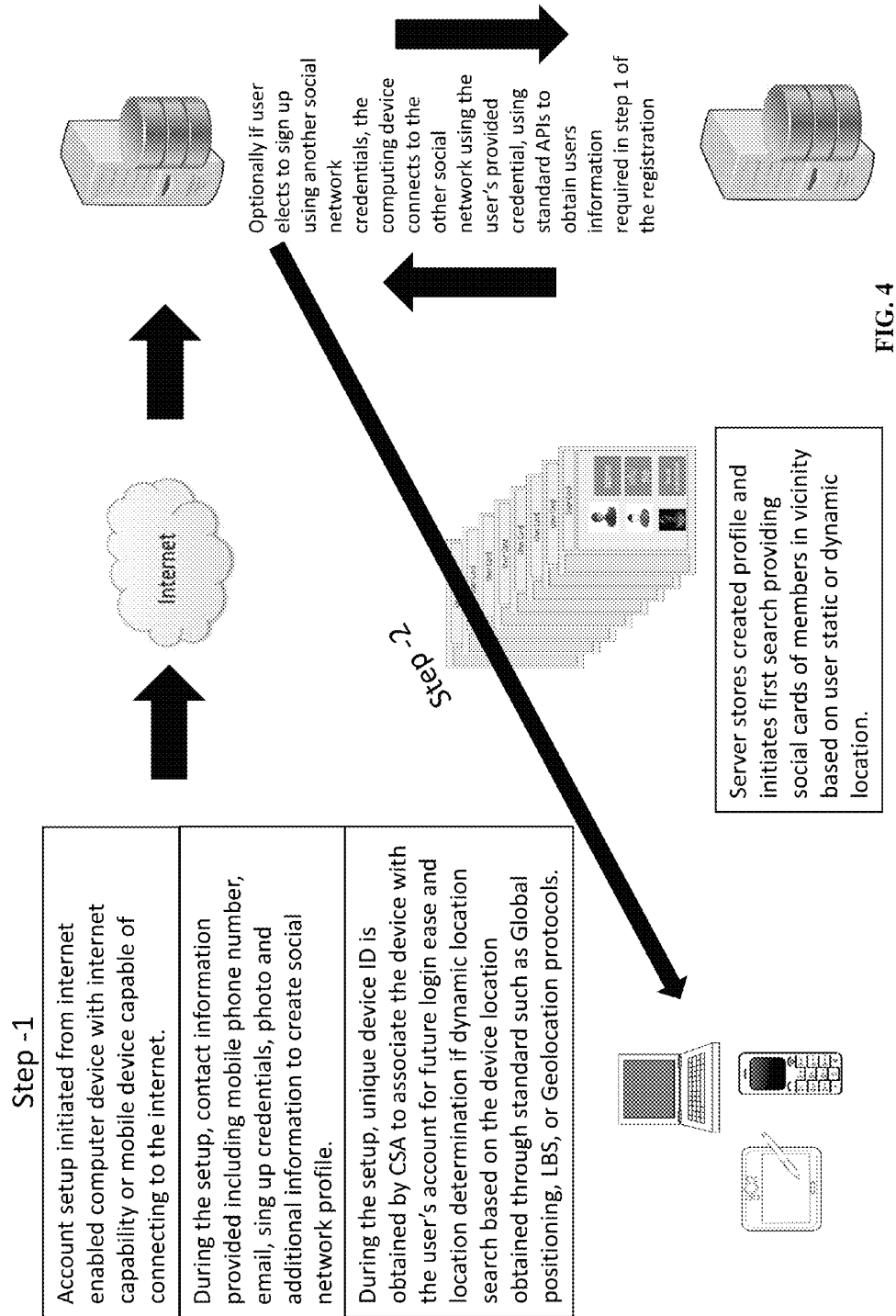
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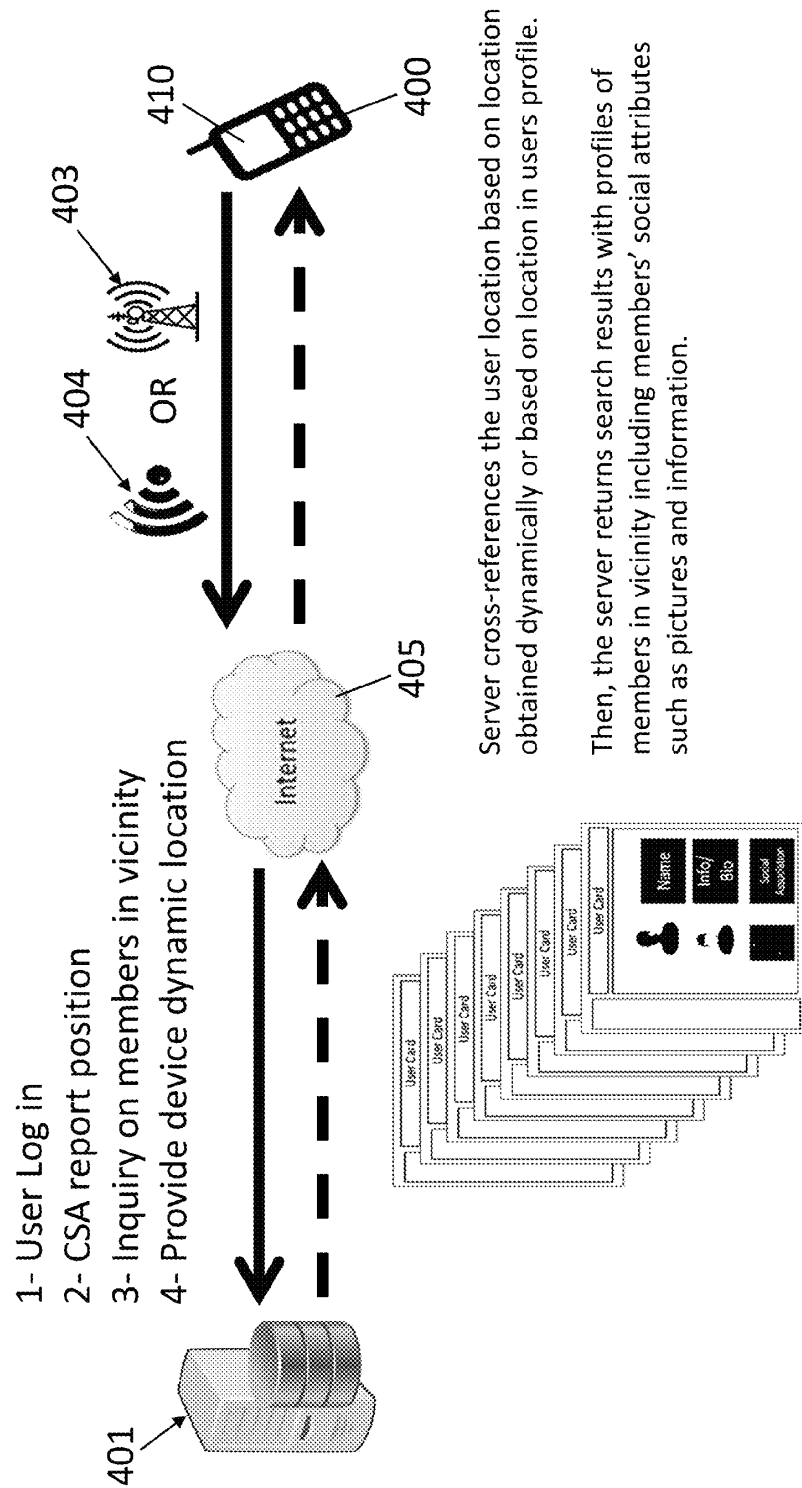


FIG. 5

Server cross-references the user location based on location obtained dynamically or based on location in users profile.

Then, the server returns search results with profiles of members in vicinity including members' social attributes such as pictures and information.

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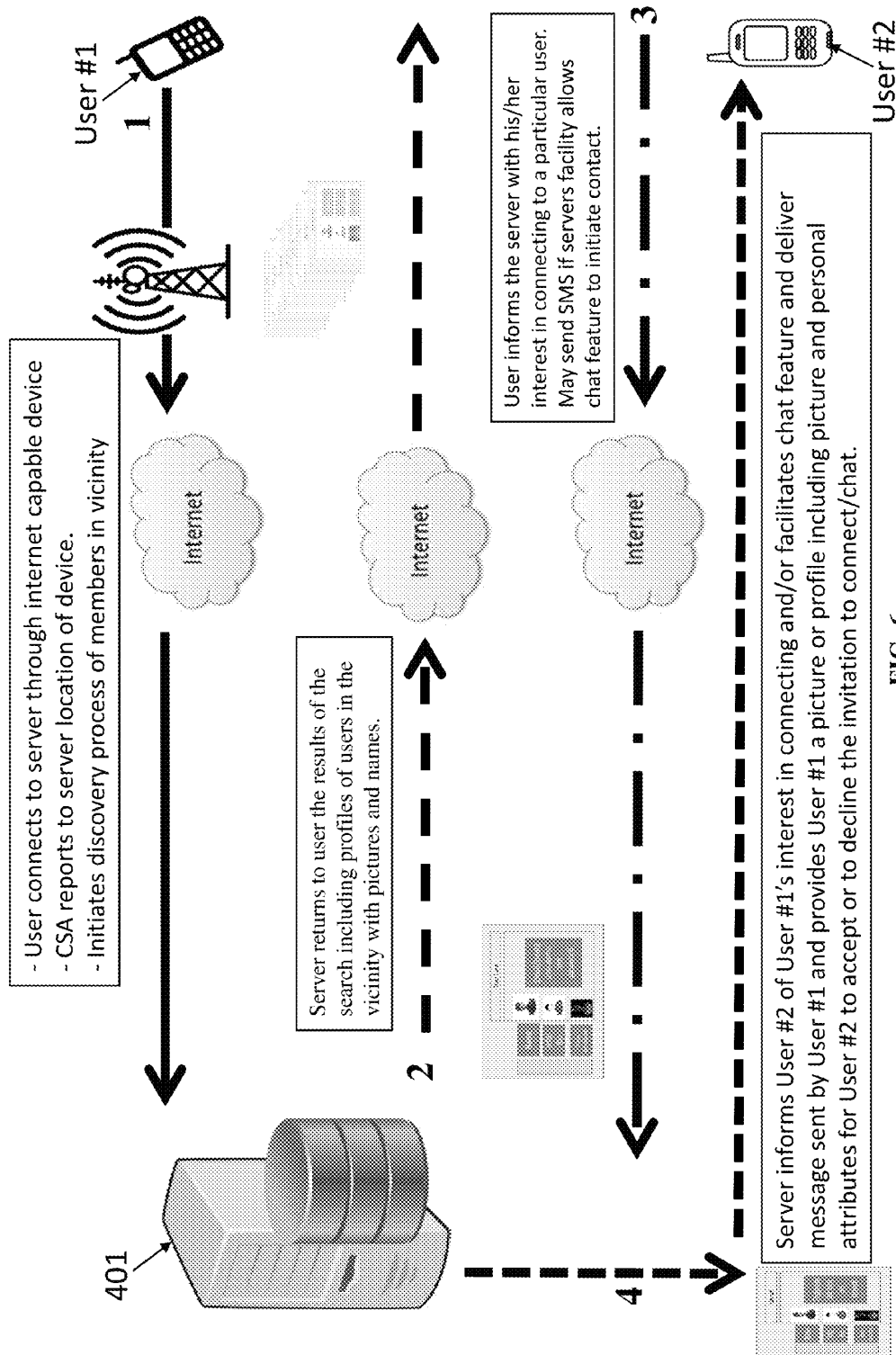


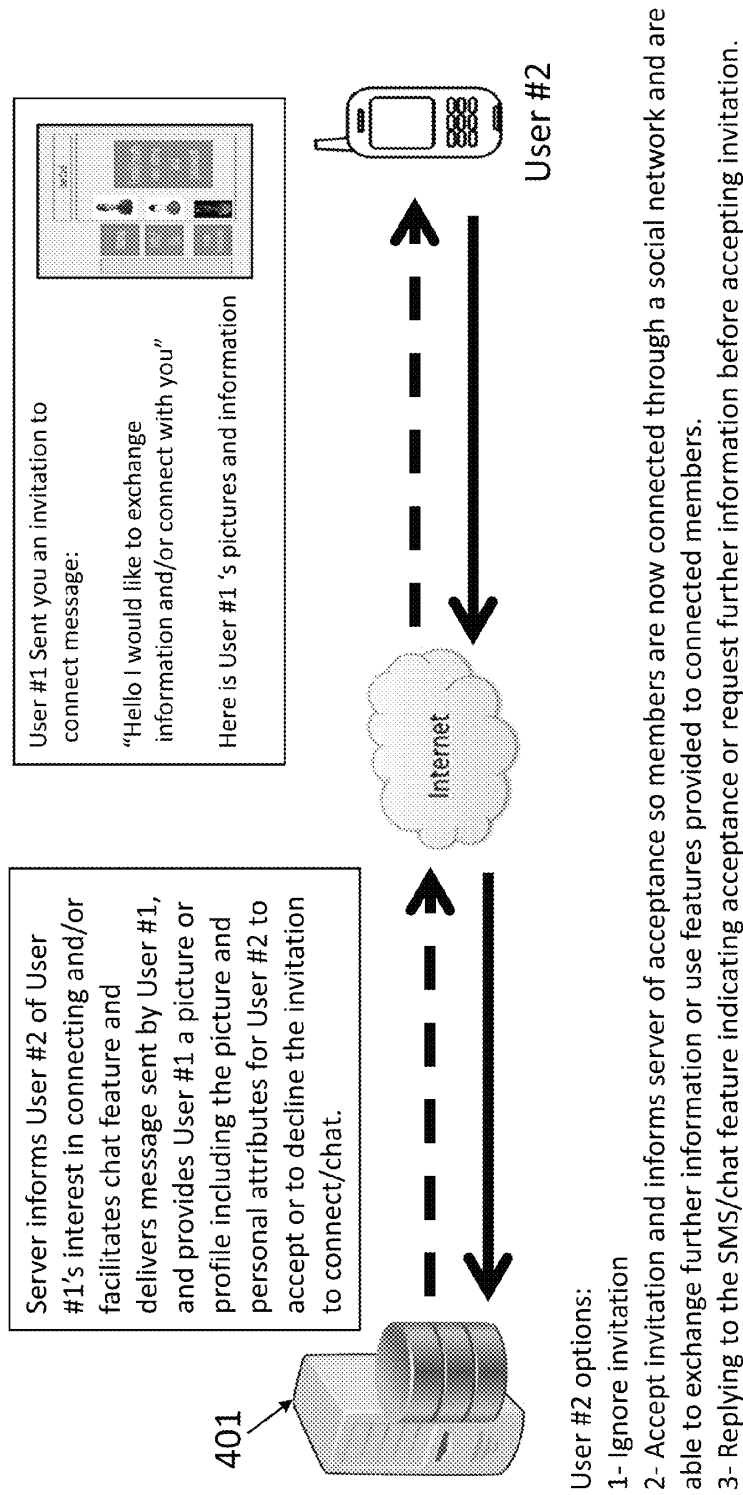
FIG. 6

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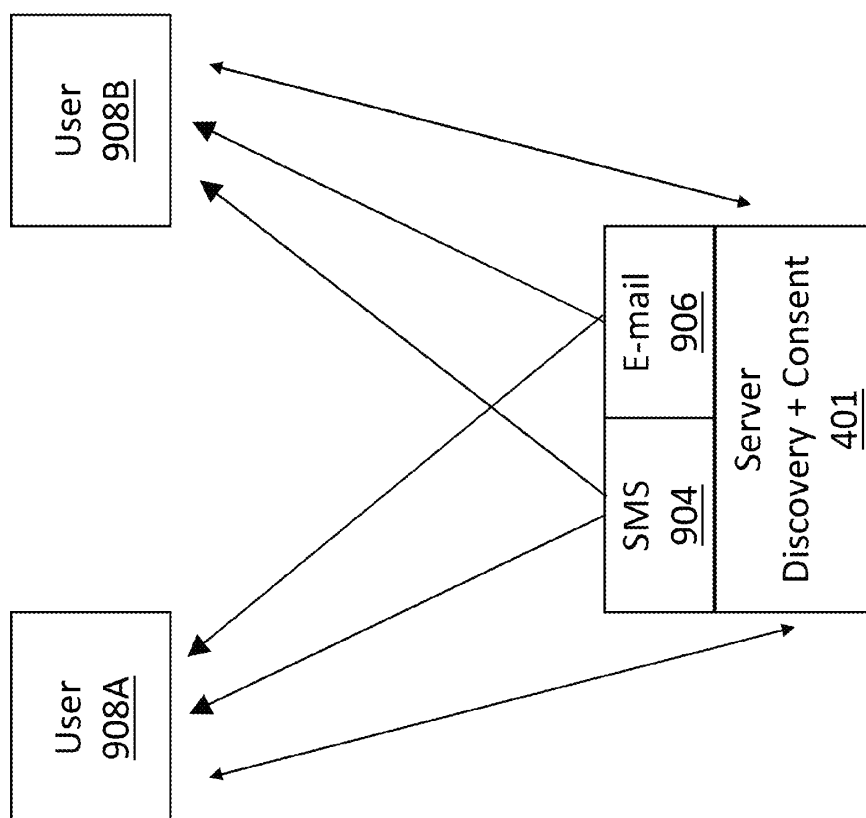


FIG. 8

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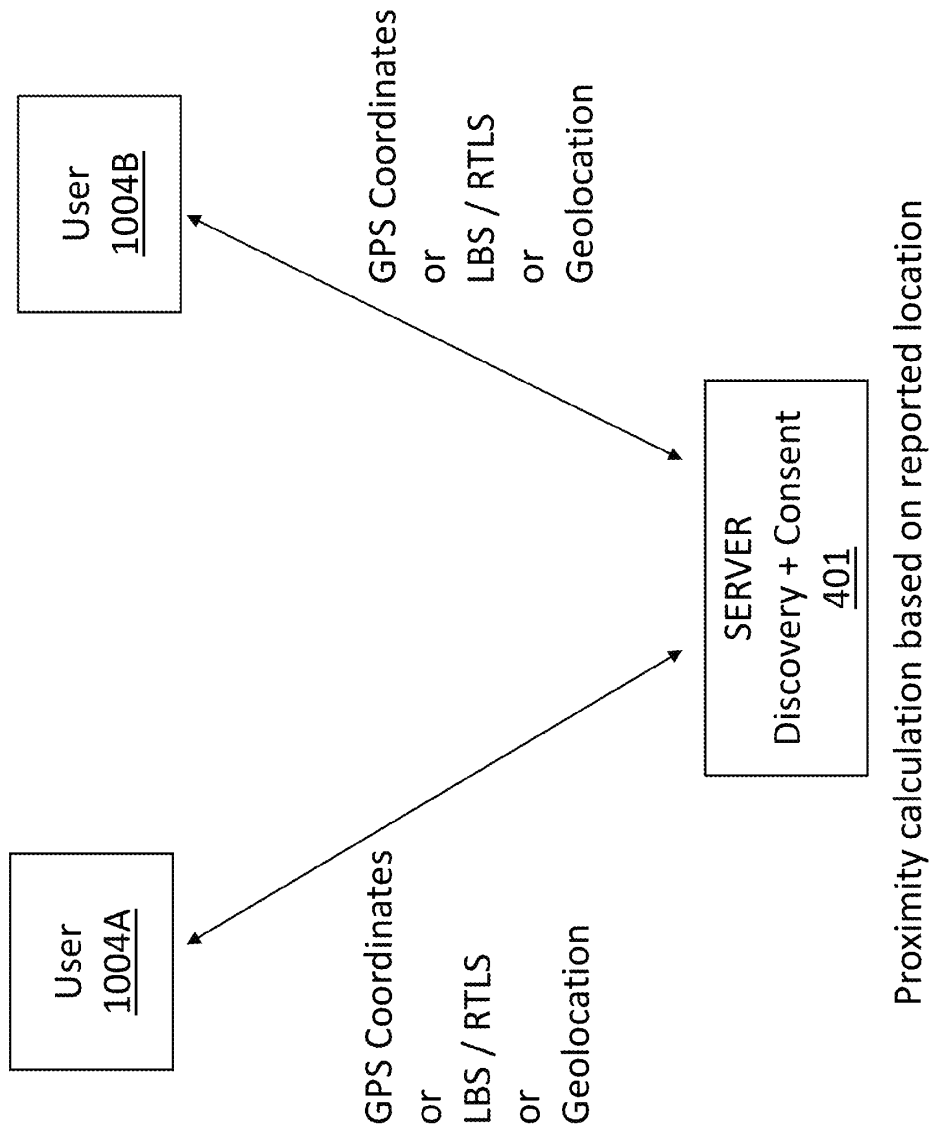


FIG. 9

APPX132

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LOCATION-BASED DISCOVERY OF NETWORK MEMBERS BY PERSONAL ATTRIBUTES USING DYNAMIC AND STATIC LOCATION DATA

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a continuation-in-part of U.S. application Ser. No. 14/570,779, filed on Dec. 15, 2014, which is a continuation-in-part of U.S. application Ser. No. 12/351,654, filed on Jan. 9, 2009, now U.S. Pat. No. 8,914,024, issued on Dec. 16, 2014, which claims benefit to U.S. Provisional Application No. 61/010,891 filed on Jan. 10, 2008, the complete disclosures of which, in their entireties, are herein incorporated by reference.

BACKGROUND

1. Technical Field

The embodiments herein generally relate to communication systems, and more particularly to device connectivity in a communications network.

2. Description of the Related Art

In light of the explosive use of mobile devices, social networks and email addresses, individuals are in need of the ability to exchange customized information such as pictures, social network profiles, emails and phone numbers using their mobile devices. There are methods to exchange contact information in the form of virtual cards (Vcards). However, there is generally no form of communication using mobile devices that allows discovery by personal attributes for the purpose of exchanging contact information. Furthermore, generally there is no available technology adapted allowing mobile device users to easily exchange contacts and/or related personal information over the internet for the purpose of social interaction by way of mobile devices without limitations to hardware brands.

Available methods for contact information exchange do not typically provide discovery by attributes. Rather, these methods assign pin numbers to individuals or offer discovery by a mobile class or mobile ID. Typically, these systems require a user to operate under a common telecommunication service provider operated network. Other methods are based on Bluetooth® technology in an ad hoc mode between two devices. These methods usually work only on the same brand mobile devices due to Bluetooth® technology limitations, compatibility and security issues.

In recent years, social networks began collaboration and establishment of an API protocol which stands for Application Programming Interface that allows for social networks to connect to each other with given permission from the user, to import data or pictures from one social network to another. Yet no method generally allows members of various social networks to interexchange contact information, or offer third party solution dedicated to members connecting with others whom are not known to members based on the vicinity and common interest.

Communication between two Bluetooth-enabled devices typically requires entering a passkey or security code to allow pairing or communication between any two devices. This desire for maintaining security/privacy, inherent in the design of existing Bluetooth-enabled devices, such as a Smartphone, has imposed undesirable limitations on mobile device users who wish to interact with each other in a social setting.

Other alternatives available for contact information exchange such as Beam technology permit the exchange to

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take place between similar mobile devices using an infrared signal. This particular solution is, however, limited. For example, it requires a line-of-sight between the devices and does not offer the ability to exchange information such as pictures as a personal attribute and limits the use to a similar brand of hardware transmitting in an ad hoc mode.

U.S. Pat. Nos. 6,868,451; 7,249,182; 7,440,746; 7,450,996; and 7,454,004, the complete disclosures of which, in their entireties, are herein incorporated by reference, focus on contact information storage, retrieval, Bluetooth® technology methods of profiles and exchange of contact information.

Additionally, there has been advanced ability to precisely determine mobile devices locations but all the standards in place are geared towards identifying devices locations as instruments. There are no human face associated with the searches in those standards and no links to social networks. They are simply industry standards without connection to exploding applications and methods of mobile devices use.

Multiple advanced technologies have been added to the mobile phone industry by International Organizations for Standards to provide accurate dynamic reporting of the mobile devices. Some of the standards adopted are: LBS (Location Based Service) based on GPS (Global local positioning), RTLS Real-Time Locating System, as noted in ISO/IEC 19762-5 and ISO/IEC 24730-1 and Geolocation which is also the latitude and longitude coordinates of a particular location. Geolocation uses radio Frequency RF location, TDOA (Time Difference Of Arrival), information from cell towers to triangulate the approximate position, and Internet Protocol (IP) address among other information to determine the exact address of a mobile device or terminal connected to the internet. The terms and definitions are standardized by ISO/IEC 19762-5:2008.

SUMMARY

In view of the foregoing, an embodiment herein provides a system comprising a computing device configured to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members such as picture(s) and name, wherein the computing device associates unique hardware identification of member devices and login credentials with member profiles and via a search process returns searches of members for others in a vicinity or in proximity thereto, and with personal attributes comprising pictures and names bringing an image of a human face to a device allocation in the search process; and a first user using a respective first mobile communications device and a second user using a respective second mobile communications device each capable of connecting to the internet through any of a mobile telecommunications provider network and a local area wireless network, wherein the computing device being in communication with the first and second mobile communication devices through internet connection via an application installed on the respective first and second mobile communication devices of the users, and configured to provide access to stored user profile information about the first user and the second user, respectively, including personal attributes comprising picture(s), a name, information, and a location, wherein the computing device is configured to store static locations of members and receive information identifying current dynamic locations of all members based on real time location reporting from a client side application, wherein the computing device is configured to calculate and determine a proximity of user locations based on any of a static and a dynamic location of the members which are updated on a

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profile database of the members, wherein the computing device is configured to send to the first user upon inquiring of other members in the vicinity of the first user, personal attributes of all other members based on proximity calculations to select members that the first user may wish to connect with, and to send to the second mobile communication device an invitation on behalf of the first user and including first user personal attributes for the second user to accept connecting with the first user, wherein the computing device is configured to connect the first user and the second user through a members-only-social-network communication tools between the first user and the second user, wherein the communication tools comprise any of SMS, E-mail, chat/instant messaging, multimedia, voice, and video, and wherein the computing device is configured to locate information about the second user from a social network storage file of the second user, and transmit this information to the first mobile communications device for further information beyond first introductory attributes such as picture and name only.

The first and second users may be members of a same social network, and the computing device may be operable to disclose social network attributes of the first and second users in the vicinity or within a particular distance from one another for connecting members. The computing device may be configured to receive customized parameters from the first user on a search vicinity scope and a customized selection of a start point other than a current user location. The computing device may be operable to provide any user with the social network attributes of all members in the social network in the vicinity or in proximity thereto. The computing device may be configured to receive an inquiry from the first user regarding members in proximity to a first user location. The computing device may be configured to recommend to members other members in the vicinity to connect with to promote social interaction. The computing device may be configured to report to the first user social network attributes of all members of the social network who are in proximity to the first user. The computing device may be configured to receive from the first user a selection of one or more additional users with whom the first user wishes to connect with through the social network.

The computing device may be configured to send to the first user further social attributes of one or more of selected additional users beyond the picture and name used in the introductory search results. The computing device may be configured to obtain permission of a selected user prior to revealing further information beyond an introductory picture and name when a user preference is set for such a permission requirement. The computing device may be configured to update profile information to indicate that the first and second users are connected. The computing device may be configured to store communication between members and synchronize saved communication on a client side application used on devices for communication. The computing device may be configured to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location. The updated location indicators may be based on user location information reported to the computing device by any of mobile device real time location reporting technology and internet protocol address location information and saved to profiles of users. The computing device may permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by the first user, and the computing device may permit the discoverable members to have their respective devices unconnected to an internet connection service at the time of the search being

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conducted by the first user, wherein any of turned off devices and disconnected devices may be discoverable by the computer device as the internet connection service is configured to report the any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to the first user.

Another embodiment provides a method comprising using a computing device to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members such as picture(s) and name, wherein the computing device associates unique hardware identification of member devices and login credentials with member profiles and via a search process returns searches of members for others in a vicinity or in proximity thereto, and with personal attributes comprising pictures and names bringing an image of a human face to a device allocation in the search process; providing a first user using a respective first mobile communications device and a second user using a respective second mobile communications device each capable of connecting to the internet through any of a mobile telecommunications provider network and a local area wireless network; using the computing device to be in communication with the first and second mobile communication devices through internet connection via an application installed on the respective first and second mobile communication devices of the users, and to provide access to stored user profile information about the first user and the second user, respectively, including personal attributes comprising picture(s), a name, information, and a location; using the computing device to store static locations of members and receive information identifying current dynamic locations of all members based on real time location reporting from a client side application; using the computing device to calculate and determine a proximity of user locations based on any of a static and a dynamic location of the members which are updated on a profile database of the members; using the computing device to send to the first user upon inquiring of other members in the vicinity of the first user, personal attributes of all other members based on proximity calculations to select members that the first user may wish to connect with, and to send to the second mobile communication device an invitation on behalf of the first user and including first user personal attributes for the second user to accept connecting with the first user; using the computing device to connect the first user and the second user through a members-only-social-network communication tools between the first user and the second user, wherein the communication tools comprise any of SMS, E-mail, chat/instant messaging, multimedia, voice, and video; and using the computing device to locate information about the second user from a social network storage file of the second user, and transmit this information to the first mobile communications device for further information beyond first introductory attributes such as picture and name only.

The first and second users may be members of a same social network, and wherein the method further comprises using the computing device to disclose social network attributes of the first and second users in the vicinity or within a particular distance from one another for connecting members. The method may further comprise using the computing device to receive customized parameters from the first user on a search vicinity scope and a customized selection of a start point other than a current user location. The method may further comprise using the computing device to provide any user with the social network attributes of all members in the social network in the vicinity or in proximity thereto. The

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method may further comprise using the computing device to receive an inquiry from the first user regarding members in proximity to a first user location. The method may further comprise using the computing device to recommend to members other members in the vicinity to connect with to promote social interaction.

The method may further comprise using the computing device to report to the first user social network attributes of all members of the social network who are in proximity to the first user. The method may further comprise using the computing device to receive from the first user a selection of one or more additional users with whom the first user wishes to connect with through the social network. The method may further comprise using the computing device to send to the first user further social attributes of one or more of selected additional users beyond the picture and name used in the introductory search results. The method may further comprise using the computing device to obtain permission of a selected user prior to revealing further information beyond an introductory picture and name when a user preference is set for such a permission requirement. The method may further comprise using the computing device to update profile information to indicate that the first and second users are connected.

The method may further comprise using the computing device to store communication between members and synchronize saved communication on a client side application used on devices for communication. The method may further comprise using the computing device to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location. The updated location indicators may be based on user location information reported to the computing device by any of mobile device real time location reporting technology and internet protocol address location information and saved to profiles of users. The method may further comprise using the computing device to permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by the first user; and using the computing device to permit the discoverable members to have their respective devices unconnected to an internet connection service at the time of the search being conducted by the first user, wherein any of turned off devices and disconnected devices may be discoverable by the computer device as the internet connection service is configured to report the any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to the first user.

These and other aspects of the embodiments herein will be better appreciated and understood when considered in conjunction with the following description and the accompanying drawings. It should be understood, however, that the following descriptions, while indicating preferred embodiments and numerous specific details thereof, are given by way of illustration and not of limitation. Many changes and modifications may be made within the scope of the embodiments herein without departing from the spirit thereof, and the embodiments herein include all such modifications.

BRIEF DESCRIPTION OF THE DRAWINGS

The embodiments herein will be better understood from the following detailed description with reference to the drawings, in which:

FIG. 1 illustrates communication links to/from mobile devices and a network-based server; according to an embodiment herein;

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FIG. 2 illustrates an example of a computer or mobile device, and a generated display for registering with a service, according to an embodiment herein;

FIG. 3 illustrates an example of a database schema/structure for maintaining personal information about a user (member) registered with the service, according to an embodiment herein;

FIG. 4 is a flowchart associated with the creation of a social card and a user account/profile to initiate the use of the service of discovering others in the vicinity with personal attributes such as pictures and names, according to an embodiment herein;

FIG. 5 illustrates a discovery process flowchart, according to an embodiment herein;

FIG. 6 is a flowchart for a discovery process between users, according to an embodiment herein;

FIG. 7 is a flowchart depicting the processing of a user initiating discovery and showing interest to connect to a second user where all communication is managed by the server, according to an embodiment herein;

FIG. 8 illustrates the establishment of the communication between users, according to an embodiment herein; and

FIG. 9 illustrates an arrangement in which a server receives GPS/LBS/GEOLOCATION coordinates from users, compares these coordinates to determine proximity, and informs the users of the proximity, according to an embodiment herein.

DETAILED DESCRIPTION

The embodiments herein and the various features and advantageous details thereof are explained more fully with reference to the non-limiting embodiments that are illustrated in the accompanying drawings and detailed in the following description. Descriptions of well-known components and processing techniques are omitted so as to not unnecessarily obscure the embodiments herein. The examples used herein are intended merely to facilitate an understanding of ways in which the embodiments herein may be practiced and to further enable those skilled in the art to practice the embodiments herein. Accordingly, the examples should not be construed as limiting the scope of the embodiments herein. As used herein, the terms “a” or “an” are used, as is common in patent documents, include one or more than one. In this document, the term “or” is used to refer to a “nonexclusive or” unless otherwise indicated.

The embodiments herein relate to members discovering other members in the same social network who are in the vicinity by personal attributes such as picture(s), name and location. The personal attributes are stored in users' profiles on the social network server and are associating with each member's unique hardware identification and log-in credentials. Discovering other members would be for the purpose of exchanging personal information, connecting to each other through the social network services and communicating through SMS, E-mail, chat/instant messaging, text, multimedia, or video features that maybe offered by the same social network.

According to one aspect of the embodiments herein, mobile device users sign up or register with a service through website or using their mobile device. For ease of registration, optionally the users can sign up using existing other social network credentials and import pictures from this second social network for the new account creation if this other social network allows porting of users' information and personal attributes such as picture(s) and name. Users may be required to provide additional information if personal attributes such

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as picture and name were imported via API from another social network to complete the sign up process. Signing up through a mobile device will require that the user clearly have downloaded the CSA (Client Side Application) from either a depository third party application provider or request from the service website to send to his/her mobile a link allowing the download of the application. Referring now to the drawings, and more particularly to FIGS. 1 through 9, where similar reference characters denote corresponding features consistently throughout the figures, there are shown preferred embodiments.

FIG. 1 illustrates how communication between mobile users 400 and the server 401 is conducted. FIG. 1 is directed to an arrangement in which a server/computing device 401 communicates bi-directionally with user devices 400 by way of a cellular base transceiver station (BTS) 403 through a standard that also provides separate facilities (not shown) for transmission of digital data. In certain embodiments, communication between the member's mobile devices and the server goes through a BTS 403, and communicates according to a packet-based telecommunications protocol such as GPRS, 3G, 4G, LTE or any alternative data technology. In FIG. 1, communication links to/from mobile devices 400 and a network-based server 401 are provided; e.g., internet server, over a BTS 403 using standard communication protocols that provide separate facilities for transmission of digital data, or through wireless connection 404 capable of connecting the user to the internet 405. As depicted, the mobile devices 400 may communicate through the server 401 to discover other members in the vicinity based on static location provided during sign up or dynamic location obtained from LBS, GPS, or Geolocation standards.

A list of example of services provided to various devices and mobile phones 400 regardless of method of communication used to connect to the server 401 via the internet 405 include registration, view newly created social card/profile, edit profile including adding multiple pictures, obtaining user location dynamically based on standard mobile communication protocols, search for members in vicinity, access additional features provided by social network such as chat/sms view members who discovered the user, accept or reject invitations to connect, and access any features provided by a social network.

The user provides information by filling out an on-line profile through a web based interface or interface provided by the CSA, including uploading graphics or pictures. An example of an electronic generated sign-up screen is shown in FIG. 2. Additional aspects of the registration process include creating a social card or profile, which is intended to be shared with other users or be discovered by other users. The user's profiles are available for people in the vicinity to view, via a mobile data connection to internet or direct internet connection from the mobile device to local wireless network.

FIG. 2, with reference to FIG. 1, depicts an example of a computer or mobile device 100, and generated display 101 for registering with a service. This service may provide a user with a network-based storage for personal contact information, creation of a custom social card to send to discovered, or discovering, users who are also members of the service, for the purpose of providing personal contact information including personal attributes such as picture(s) to other users and for accessing personal contact information including personal attributes such as picture(s) by of other users of the service. The service may be part of a social network. The registration may offer option to sign up using another social network credentials for ease or registering and authentication. The

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CSA will obtain a mobile device unique ID upon complete sign up from a mobile device 100 or upon first access from a mobile device 100.

As mentioned above, the registration process also includes downloading of the CSA, where the CSA resides on the mobile device 100, and enabled to communicate directly with the service, through a provided internet connection, to synchronize/update contacts and to manage communication with contacts or potential new contacts, access account information via username/password, or phone ID, send search requests for information about users in the vicinity, send invitations, accept, exchange deny requests for exchange of information, obtain instances of the server addresses, allow the user to edit his/her own profile, update photos or information or add additional photos or information, etc. The CSA connects to the server through internet connection provided by the mobile device 100.

Personal and other user information can also be added by way of the CSA for storage on a server, including hobbies, business associations, or personal information as examples. This and other information can also be added for storage on the server means other than the CSA, such as the user's personal computer, a dedicated kiosk, or other means for accessing the server through the internet. In order to take advantage of the functionalities provided by the service, the member of the service ("member") should have a mobile communication device that provides separate facilities (besides voice transmission) for transmitting digital data. This allows a mobile phone to act like any other computer over the Internet, sending and receiving data via the Internet Protocol.

One format for storing information about a user/member of the service is shown in FIGS. 2 and 3. Depicted herein are some of the types of user information that may be stored and made accessible to the user at the server. Users may provide personal attributes such as name, address, and a picture. Information about the user's mobile device 100 may include the make, model, and phone number.

FIG. 3, with reference to FIGS. 1 and 2, illustrates an example of a database schema/structure 200 for maintaining personal information about a user (member) registered with the service. The information about the member may include, for example, his/her mobile device attributes such as the device key, mobile telecommunications provider; the mobile device type; the member's profile, e.g., name, address, etc.; stored photo(s) of the user; country/state where the member resides; and other information.

The service provided to users may be operated/accessible under a centralized computer system ("server"), which may include but not limited to four components: 1) Graphical user interface, providing an interface to members of the network to sign up, input/edit profile information, etc. 2) A scripting language designed for producing dynamic web pages and mobile language web pages. 3) A comprehensive data base that includes user's information, for example as discussed above and shown in FIG. 1. Computing capabilities such as calculating proximity of members based on static location information in database or dynamic location info obtained through the CSA.

FIG. 4, with reference to FIGS. 1 through 3, is a flowchart depicting a process for registering with the service: Account set up and information provided through a web-based User Interface 101, e.g., such as shown in FIG. 2; or mobile device CSA. The user optionally has the flexibility of signing up to the service and import personal attributes including picture, name and additional information by using a second social network credentials. The CSA collects characteristics from the mobile device such as a phone number or IMEI (interna-

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tional Mobile Station Equipment Identity) for the purpose of associating the mobile device **400** with a user account maintained at the server **401**. This association between the unique ID such as IMEI, and the user account is used to report the mobile device location to the server dynamically and authenticate user with device used.

To completely utilize the mobile features provided by the service including dynamic search of members in vicinity, the user installs the CSA to the mobile device **400** that in addition to reporting location to the server, enables the user to update, replace, revise the social profile or personal attribute information, modify, hide or publish profile information (at the server) as contained in the user's contact information; e.g., the information contained in the user's profile which may be sent when the user initiates discovery process. Furthermore, the CSA allows the user to indicate interest in connecting with a member, or the user is discovered by others members searches and communicate to other members through features such as SMS, chat, text, and other features.

FIG. **4** illustrates how the server **401** may associate each mobile device **400** with a member account of the service using a unique ID such as IMEI. During the installation process, the server **401** receives from the CSA required Unique ID such as IMEI, or phone number. FIG. **4** is a flowchart associated with the creation of a social card and a user account/profile to initiate the use of the service of discovering others in the vicinity with personal attributes such as pictures and name. As well, it now allows other users to discover the new created account.

The CSA collects unique mobile device ID during the registration to associate with the newly created member profile for future location reporting and authentication for secure and future log in if needed. Once an account is created, the device **400** is not required to be powered on to be discovered. And the last location reported to the server **401** would be considered the current location OR the server **401** may elect to revoke last location reported and identify the user location to be the location provided during sign up as the default location known to the user.

FIG. **5**, with reference to FIGS. **1** through **4**, illustrates a discovery process flowchart where a user connects to the server **401** using the CSA on the mobile device **400** which reports the user location and returns the search results after cross referencing the user location with other members to determine proximity. The server **401** shares with the inquiring user pictures and names and possible profile information so user can select from the list members to connect to.

When a user connects to the server **401** to inquire about other members in the vicinity, the server **401** returns the search results based on proximity and provides personal attributes of all members in the vicinity based on last location known regardless of those reported members are connected at the time to the service or not. Proximity can be a default value set by the server **401** to be within feet or miles, etc. and may allow users to select the value of that proximity for any search inquiry. The user can modify the search to adjust the distance to set parameters for the proximity or even request a search in proximity of a specific point like a convention center or a particular town.

The CSA connection to the server **401** by the device **400** may be used to accomplish three tasks: First, to connect to the service. Second, to provide update on location. Third, to inquire on members in the vicinity based on the current location. FIG. **5** illustrates the discovery of the users using the requesting user's mobile device **400** first to log in and associate the device with the user as well as report the location and initiate a request to discover members in the vicinity. The

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requesting user's resident CSA receives from the server **401**, as a result, the profiles including pictures of all members in the vicinity.

The server **401**, after receiving an inquiry on members in the vicinity, transmits back to the requesting user mobile device **400** the pictures and names, or other information, for each of the devices in the vicinity, which are then displayed on the inquiring user mobile device screen **410**. The discovery process may thus include the showing of personal or detailed information that a member may wish to have displayed during the initial discovery step, rather than merely a device ID or address, device type, etc. At this point the requesting user has received a list of pictures and names which he/she can now select from the mobile device **400** if further connection is desirable.

In one example, in a first step of the discovery process, a user logs in the service and initiates an inquiry on members in the vicinity. The CSA reports to the server **401** the mobile device's **400** current location based on available cellular location information or IP address if the user is logged to the service via local internet connection. In the second step, the server **401** cross references the location of the user by other users know locations based on static data in the members profiles, and, current dynamic location based on latest reported location update obtained. Once the proximity calculation is complete, the server **401** returns to the first user the results of the search and provides personal attributes including pictures of all members in proximity of the first user.

FIGS. **6** and **7**, with reference to FIGS. **1** through **5**, show in further detail how users may discover each other, in four steps:

Step 1: The user connects to server **401** through an internet capable device belonging to User #1, the CSA reports to server location of the device belonging to User #1 during the log in process, the user then initiates discovery process of members in vicinity by sending an inquiry to the server **401**.

Step 2: The server **401** receives the request from User #1 CSA, the server **401** cross references the user location based on location obtained dynamically or based on the location in the user's profile. Then, the server **401** returns the search results with profiles of members in vicinity including member's social attributes such as pictures and information.

Step 3: The first user reviews the search results and informs the server **401** with his/her interest in connecting to a particular second user (User #2).

If applicable, User #1 may send to User #2 a message/email/sms through the server **401** if the server's facility allows such features to initiate contact.

Step 4: The server **401** informs User #2 of User #1's interest in connecting and/or facilitates a chat feature and delivers the message sent by User #1, and provides User #1 a picture or profile including the picture and personal attributes for User #2 to accept or to decline the invitation to connect/chat.

FIG. **6** is a flowchart for a discovery process between users (User #1 and User #2) where User #1 connects to server **401** through an internet capable device and CSA reports to server location of the connected device. Based on the reported location or location stored in user's profile, the server **401** returns to the User #1 profiles of all users in the vicinity based on proximity with pictures of each user.

If the user (e.g., User #1) elects to connect with any of the suggestions, the user (e.g., User #1) indicates this and the process of informing the other member (e.g., user #2) is managed by the server **401**. No direct contact occurs between users at this point and will not unless the users elect to exchange personal information such as mobile numbers to connect outside of provided service and features. This man-

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aged communication by the server **401** insures privacy and allows users to reject connections or terminate conversations without having to worry about direct connections potential issues. The communication between the server **401** and CSA are conducted via a common internet protocol suite which includes an application layer, transport layer, internet layer, and link layer.

FIG. 7 shows a further example of notification to discovered users alerting them to an exchange request. The notification shows the other users' personal attributes including name and picture. FIG. 7 is a flowchart depicting the processing of a user initiating discovery and showing interest to connect to a second user (e.g., User #2) where all communication is managed by the server **401**, according to an embodiment herein. FIG. 7 describes additional aspects of notifications and responses options to requests for exchange of electronics coordinates, personal information or connecting. All communication between users for the purpose of connecting members after the discovery is managed by the server **401**.

User #2 (the discovered user) has the option of accepting the invitation, ignoring/declining or engage in services provided by the server **401** such as chat or sms with or without accepting connection with User #1. Since all communication between members is managed by the server **401**, the server database **401** may store any contact information exchanged and add it through a synchronization method with the CSA as well as keep the history of any conversations/SMS between the members.

The CSA includes feature such as storing edits to profile or communication between the members and synchronizes to the server database **401** for storage once connection between CSA and server **401** is established. This dual storage feature allows the user to restore communication between users on a new device if the device in use is lost or damaged as well as restoring all account information.

In the case where a user switches mobile devices, all the user has to do is to install the CSA on the new device and login with his/her credentials. Once an internet connection is established between the new device CSA and server **401**, and user credentials; the server **401** synchronizes all stored information to the new device, and the new installed CSA reports the new device unique hardware identification.

A server **401** is able to facilitate communication between the two users and may provide additional features such as the ability to chat via SMS or email service and other services as illustrated in FIG. 8, with reference to FIGS. 1 through 7. In particular, FIG. 8 illustrates the establishment of the communication between users **908A**, **908B**, such as for example SMS **904**, E-mail **906**, chat/instant messaging, in the form of text or multimedia, video, etc., between consenting users **908A**, **908B** via a server **401** that initiates discovery and consent for the users **908A**, **908B** to exchange data.

The embodiments herein provide a medium for near real-time exchange of contact information, unlike E-mail, SMS or other modes of communication between mobile devices. In this sense the user experience is enhanced over the exchange of E-mail or texting among phones, in at least three ways. First, a requesting device is not limited to conversing with only members that he/she can contact through a known e-mail address, phone number, etc. Second, the exchange may proceed simply by initiating discovery and/or responding to a discovery request. Third, the exchange can occur among multiple members of a service at the same time.

The centralized computer system ("server") **401** may include, or be associated with, an SMS server platform **904** or E-mail platform **906** that provides a corresponding channel of

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communication between the users **908A**, **908B**. The users **908A**, **908B** are shown communicating directly with one another via SMS platform **904** and/or E-mail platform **906**, facilitated by server **401**.

Members can contact other users, through offered types of communication between them, for example SMS, E-mail, chat/instant messaging, in the form of text or multimedia, video, etc., can also be facilitated. This is depicted in FIG. 9, with reference to FIGS. 1 through 8, and which illustrates an arrangement in which a server **401** receives GPS/LBS/RTLS/GEOLOCATION coordinates from users **1004A**, **1004B**, compares these coordinates to determine proximity, and informs the users **1004A**, **1004B** of the proximity.

In FIG. 9, server **401** is shown receiving GPS coordinates, or LBS or RTLS Location Services information, or Geolocation information, from Users **1004A** and **1004B**, comparing these coordinates to determine proximity, and informing the users of the proximity. Informing one user of another's proximity can be contingent upon consent of the users **1004A** and **1004B**, as obtained above, and can be performed in gradations, for example initially sending limited information of one user to another, then increasing the delivered information and establishing contact depending on consent. In certain embodiments, the participating members **1004A** and **1004B** report their locations to the server **401**, for example periodically, and the server **401** maintains a record of and updates these reported locations, and provides reports to certain users, for examples to those belonging to a common social network. Members' profiles that are connected can be updated to reflect such connection information by the server/computing device **401**.

In certain embodiments, the CSA, residing on the mobile device **400**, may have but is not limited to the following software functionality: authentication and credentials storage capabilities.

An "authentication" portion requests authentication parameters from a user (ID or user login name and password); connects to an instance of server **401**; sends user authorization information to the server side using ID or user name and password; displays a reason for denied access in case of incorrect login; and exits from the software in case of a preset number of incorrect logins; allows a user to change the password; and downloads profile information from the server **401**. The CSA has the ability to store log-in credentials such as user name and password on the device **400** and transfer the credentials to the server **401** for storage in user profile database.

Another form of authentication is to insure that the unique mobile ID obtained and on record is associated with the user's log in credentials and matches user stored information. Optionally, and with user permission, the service may connect to another social network database through APIs, which are application programming interfaces, to access other social network users attributes such as name and picture.

The methods of connecting an application programming interface would differentiate from one social network to another and be proprietary to the respective social networks. An application programming interface (API) is a set of routines, protocols, and tools for building software applications for connecting one network to another network. An API expresses user attributes such as name, picture, and any additional information on the user. The API expresses as well the social network operations, inputs, out-puts, and underlying types.

The embodiments herein recognize the previously listed advancements, while the application fills the gap between locating devices and how to humanize the devices by associ-

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ating personal attributes to each device so when a search is done, a face is found rather than a hardware ID number. None of the conventional standards/technologies used to locate mobile devices specified or provided methods allow the ability to associate devices with personal attributes or profiles that include picture and name. Associating personal attributes such as pictures and personal attributes allow users to identify other members and select members whom they wish to exchange contacts with or connect with through the social network.

Certain embodiments herein provide a system and method that allows individuals to use their mobile phones to discover others in the vicinity by personal attributes, such as by photos and name, after which, the two parties can exchange information through the social network via an internet connection bypassing the inherent limitations of same brand devices technology; e.g., security/privacy limitations and compatibility issues that limit or prohibit ad hoc communication.

The system includes a network-linked storage facility that collects information provided by members of the group; e.g., members of the social network, along with personal attributes in a data base hosted by a centralized computer with internet connection. The system associates a member's phone ID to the member's account/profile. The phone association takes place when the user downloads a client-side application which collects, among other things, a unique phone characteristic such as a standard IMEI (International Mobile Station Equipment Identity) or serial number of the mobile device or a unique identifier to associate the member with the account.

According to yet another embodiment, a system for exchanging information among members of a group is provided, such as members of a social network service, and includes an internet based server having a registration portion. After a user has registered online with the service, the server may send the application to the mobile device to download a client-side application into the mobile device. Alternatively, the user may download the CSA from the server or a third party depository offering the service to download the CSA.

A registration process is complete when a user creates a customized social card or profile with the social network, and the user may thereafter see or edit his/her social card on the mobile device or online through a device that connects to the internet. Any changes to the user's card or profile will be updated on both, the server of the social network and the CSA.

Another embodiment provides profiles that can be created by importing some or all information from a separate social network that offers API connections to users' information. This provides ease for registering and authentication to associate the discovery service with another social network that does not or may not offer such a discovery service of members in vicinity.

According to an embodiment herein, the process of discovery and exchange of contact information requires a CSA (Client Side Application) that is installed on the users' mobile devices and can connect users to the service computing device through an internet connection. The CSA functions include but are not limited to, obtaining user credentials for logging into the social network, obtaining unique hardware ID to link to user account, allowing user to edit profile and personal attributes, manage communication with contacts and access features of the service provides such as SMS, text, voice, multimedia and communications with other members.

The vicinity and determination of the proximity is based on either static or dynamic user location. The static location is what the user enters during registration and saved in his/her

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profile, or obtained through API from another social network if the user elected to sign up to the service with another social network credentials. The dynamic location is a data point entry in the user's profile location which is constantly updated based on information obtained each time the user logs into the social network. The dynamic updated information is obtained through location standards such as GPS, LBS, RTLS or Geolocation services.

The embodiments herein fill a gap left by the existing standards and technologies when it comes to the actual discovery process and exchange of contact information over the internet bypassing ad hoc communication and compatibility and provides personalized way of discovering people by pictures primarily.

According to another embodiment herein, a method for meeting people including discovering people; e.g., viewing their pictures, names, or other personal information, and selecting one or more people to send an invitation to, is provided. The invitation may take the form of a social card, V-Card, or other manner of engaging another person in a social atmosphere like quick SMS or flag that there is interest of connecting, or even a business setting such as a meeting, trade show, conference, etc.

In one aspect, the embodiments herein provide a system and method that enables discovery of others who also desire social interaction, but without being constrained by hardware compatibility issues inherent in mobile devices by different manufacturers. According to this aspect of the embodiments herein, mobile device users (or users) can offer to other, nearby users, their pictures or other information as part of a discovery process, save contacts received from other users, and keep contacts stored on a mobile device up to date by upload/download of personal information through a networked storage capability provided by the computing device; e.g., an internet-linked storage device accessible through a cellular phone network.

For purposes of explanation, the following definitions are adopted. A "requesting user" is the person or person(s) who is connected to the service of the social network through the internet using an internet-enabled mobile device, initiates a discovery process; e.g., search for other members in the vicinity, and a "discovered user" is the person or person(s) belonging to the same social network and may or may not be connected at that time to the service but in the vicinity of the requesting user and his/her personal attributes provided as a result of the initiated inquiry to the requesting user.

In one example, two persons, a requesting user and discovered or discoverable user are members of a social network which allows the members to communicate with each other as part of the social network service. The social network computing device includes a server that stores personal attribute information including static location, capable of obtaining dynamic location data and capable of calculating the proximity of members based on location regardless if it's static or dynamic. A standard discovery process may be initiated by the requesting user for other members in the vicinity. Once the user logs into the service with the mobile device using the CSA (Client Side Application), the computing device obtains location of the user based on LBS, RTLS or Geolocation, etc.

The computing device of the social network cross-references the user's location with registered members in the vicinity of the first user and returns the results by disclosing personal attributes including pictures and names of all members in the vicinity based on proximity location. The user who initiated the inquiry can select from the results returned any discovered user he/she wishes to connect with and send a form of invitation to connect using network available tools

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such as email, sms, text or any customized invitation form. The invitation to connect to the inquiring user would include his/her personal attributes including picture and name. The discovered member who received invitation can accept, ignore or decline connecting with the inquiring user.

The communication between requesting and discovered users may then proceed through services provided by the social network computing device, thereby bypassing the limitations of communication over one protocol, network limitation/fees, or devices incompatibility. As an example, one member can be connected to the service of the social network and the computing device through internet service over cellular signal while the other person could be connected to the same service through WiFi® signal that provides internet access.

The computing device can be configured to frequently push updates of a user's contacts to his/her mobile device, and maintain backup of contacts and information of each user. Additionally, the computing device of the social network with the storage service may be configured to initiate an exchange of contact by suggesting to members recommendations on other members to connect with that could be a good fit to the user. The computing device can share with the user personal attributes of other members in the vicinity such as pictures and information of potential matches to connect with. The computing device is capable of cross-referencing members' locations and calculating the distance between members to eliminate members that are not in close proximity or in vicinity of the user conducting the search.

Users have the ability to customize their search proximity calculation by setting the distance and area for search. As an example, a sales person may look for members in the vicinity of 20 miles from him to introduce himself to. Alternatively, a person who is missing a convention in NYC while in California, may start search for members in NYC while he is in California to discover people he wishes to connect with. The recommendations based on vicinity are based on user's static location in a profile or dynamic updated location obtained from user's last log into the service.

According to another aspect of the embodiments herein, a system and method is provided that allows users of the social network, or more generally a database service, to create custom social cards that include social profiles, email information, phone numbers and/or multiple pictures as a personal attribute. In one embodiment, a social card associated with the discovered user may be viewed when a requesting user initiates an inquiry, this unique experience puts a human face on each phone detected during the search rather than an uninteresting Bluetooth® address which is current method of returning search in vicinity now using short range wireless signal.

For instance, the social card may include a picture, a name, location, personalized icons or card designs, etc. Furthermore, the requesting user may receive a plurality of such social cards when there are many members of the service within the short range network or vicinity, or geographic area as defined by the user who is conducting the search.

If the requesting user elects to make contact with one or more of the members discovered in the vicinity, he/she may send an invitation including sharing the requesting user's card or custom profile containing a picture or pictures of the requesting user with a personalized message intended to spark an interest with the discovered user. The discovered user may then respond by accepting a connection, denying or utilize other services provided by the social network such as SMS, chat or email between users.

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According to another aspect of the embodiments herein, a method for discovering a person over a type of communication network is provided, and then the method permits communicating with that person over a second type of communication network after initial acceptance; e.g., using a WiFi® network to connect to the internet and discover the person. The first member can then continue communication with the second member later on a cellular phone network that provides data connection to the internet. This means that as long as both members connected to the service via an internet connection, they can communicate regardless of proximity or type of device each member may have or type of method used to connect to the internet.

The server is capable of providing information to members mobile devices phones not capable of exchanging data via Bluetooth® or the related ad hoc network communication protocol, and/or not connected to a cellular phone network via a common cellular phone network provider, or provider plan as long as the device has capability and is connected to the internet.

The method may further include the step of selecting and exchanging information based on pictures received as a result of the promotional message by the service to encourage members to connect to others in the vicinity. The mobile device users are members of a social network service that operates/maintains the server.

According to another embodiment, a server is provided that is capable of providing a communication between a first and second mobile phone user through the server and inform each member that they received message or invitation from others members. Notifications to mobile device users about invitations or messages received can be sent to users by SMS or the CSA notification messaging services.

In certain embodiments, unique member identifiers comprising a Bluetooth® device address, or a WiFi® address, or a main component address such as IMEI, which is the international mobile station equipment identifier, is associated with the device and member login credentials; and are stored on the server associated with the user's profile/social card.

This authentication is important so when a search is conducted on a mobile device and hardware ID is returned as search results from standard protocols, the embodiments herein associate a profile with the unique ID and returns the search results in the form of personal attributes such as picture and name. Additional advantages are detailed later for authentication with devices, retrievals of account on new devices and more. The system provided by the embodiments herein does not require that discoverable members have their respective devices turned on at the time of the search conducted by the first user or connected at the time to the service through internet connection. Thus, the server returns the search results of all members in the vicinity based on their location and proximity to the first user based on stored static locations and the latest dynamic location known and stored on the server.

The foregoing description of the specific embodiments will so fully reveal the general nature of the embodiments herein that others can, by applying current knowledge, readily modify and/or adapt for various applications such specific embodiments without departing from the generic concept, and, therefore, such adaptations and modifications should and are intended to be comprehended within the meaning and range of equivalents of the disclosed embodiments. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

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What is claimed is:

1. A system comprising:

a computing device configured to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members such as picture(s) and name, wherein said computing device associates unique hardware identification of member devices and login credentials with member profiles and via a search process returns searches of members for others in a vicinity or in proximity thereto, and with personal attributes comprising pictures and names bringing an image of a human face to a device allocation in said search process; and

a first user using a respective first mobile communications device and a second user using a respective second mobile communications device each capable of connecting to the internet through any of a mobile telecommunications provider network and a local area wireless network,

wherein said computing device being in communication with the first and second mobile communication devices through internet connection via an application installed on the respective first and second mobile communication devices of the users, and configured to provide access to stored user profile information about said first user and said second user, respectively, including personal attributes comprising picture(s), a name, information, and a location,

wherein said computing device is configured to store static locations of members and receive information identifying current dynamic locations of all members based on real time location reporting from a client side application,

wherein said computing device is configured to calculate and determine a proximity of user locations based on any of a static and a dynamic location of the members which are updated on a profile database of said members,

wherein said computing device is configured to send to said first user upon inquiring of other members in the vicinity of said first user, personal attributes of all other members based on proximity calculations to select members that said first user may wish to connect with, and to send to said second mobile communication device an invitation on behalf of said first user and including first user personal attributes for said second user to accept connecting with said first user,

wherein said computing device is configured to connect said first user and said second user through a members-only-social-network communication tools between said first user and said second user, wherein said communication tools comprise any of SMS, E-mail, chat/instant messaging, multimedia, voice, and video, and

wherein said computing device is configured to locate information about said second user from a social network storage file of said second user, and transmit this information to said first mobile communications device for further information beyond first introductory attributes such as picture and name only.

2. The system of claim 1, wherein the first and second users are members of a same social network, and wherein said computing device is operable to disclose social network attributes of said first and second users in the vicinity or within a particular distance from one another for connecting members.

3. The system of claim 1, wherein said computing device is configured to receive customized parameters from said first

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user on a search vicinity scope and a customized selection of a start point other than a current user location.

4. The system of claim 2, wherein said computing device is operable to provide any user with said social network attributes of all members in said social network in the vicinity or in proximity thereto.

5. The system of claim 2, wherein said computing device is configured to receive an inquiry from said first user regarding members in proximity to a first user location.

6. The system of claim 2, wherein said computing device is configured to recommend to members other members in the vicinity to connect with to promote social interaction.

7. The system of claim 2, wherein said computing device is configured to report to said first user social network attributes of all members of said social network who are in proximity to said first user.

8. The system of claim 7, wherein said computing device is configured to receive from said first user a selection of one or more additional users with whom said first user wishes to connect with through said social network.

9. The system of claim 7, wherein said computing device is configured to send to said first user further social attributes of one or more of selected additional users beyond the picture and name used in the introductory search results.

10. The system of claim 2, wherein said computing device is configured to obtain permission of a selected user prior to revealing further information beyond an introductory picture and name when a user preference is set for such a permission requirement.

11. The system of claim 1, wherein said computing device is configured to update profile information to indicate that the first and second users are connected.

12. The system of claim 2, wherein said computing device is configured to update profile information to indicate that the first and second users are connected.

13. The system of claim 2, wherein said computing device is configured to store communication between members and synchronize saved communication on a client side application used on devices for communication.

14. The system of claim 1, wherein said computing device is configured to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location.

15. The system of claim 14, wherein updated location indicators are based on user location information reported to said computing device by any of mobile device real time location reporting technology and internet protocol address location information and saved to profiles of users.

16. The system of claim 1, wherein said computing device permits discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by said first user, wherein said computing device permits said discoverable members to have their respective devices unconnected to an internet connection service at said time of the search being conducted by said first user, and wherein any of turned off devices and disconnected devices is discoverable by said computer device as said internet connection service is configured to report said any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to said first user.

17. A method comprising:

using a computing device to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members such as picture(s) and name, wherein said computing device

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associates unique hardware identification of member devices and login credentials with member profiles and via a search process returns searches of members for others in a vicinity or in proximity thereto, and with personal attributes comprising pictures and names bringing an image of a human face to a device allocation in said search process;

providing a first user using a respective first mobile communications device and a second user using a respective second mobile communications device each capable of connecting to the internet through any of a mobile telecommunications provider network and a local area wireless network;

using said computing device to be in communication with the first and second mobile communication devices through internet connection via an application installed on the respective first and second mobile communication devices of the users, and to provide access to stored user profile information about said first user and said second user, respectively, including personal attributes comprising picture(s), a name, information, and a location;

using said computing device to store static locations of members and receive information identifying current dynamic locations of all members based on real time location reporting from a client side application;

using said computing device to calculate and determine a proximity of user locations based on any of a static and a dynamic location of the members which are updated on a profile database of said members;

using said computing device to send to said first user upon inquiring of other members in the vicinity of said first user, personal attributes of all other members based on proximity calculations to select members that said first user may wish to connect with, and to send to said second mobile communication device an invitation on behalf of said first user and including first user personal attributes for said second user to accept connecting with said first user;

using said computing device to connect said first user and said second user through a members-only-social-network communication tools between said first user and said second user, wherein said communication tools comprise any of SMS, E-mail, chat/instant messaging, multimedia, voice, and video; and

using said computing device to locate information about said second user from a social network storage file of said second user, and transmit this information to said first mobile communications device for further information beyond first introductory attributes such as picture and name only.

18. The method of claim 17, wherein the first and second users are members of a same social network, and wherein said method further comprises using said computing device to disclose social network attributes of said first and second users in the vicinity or within a particular distance from one another for connecting members.

19. The method of claim 17, further comprising using said computing device to receive customized parameters from said first user on a search vicinity scope and a customized selection of a start point other than a current user location.

20. The method of claim 18, further comprising using said computing device to provide any user with said social net-

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work attributes of all members in said social network in the vicinity or in proximity thereto.

21. The method of claim 18, further comprising using said computing device to receive an inquiry from said first user regarding members in proximity to a first user location.

22. The method of claim 18, further comprising using said computing device to recommend to members other members in the vicinity to connect with to promote social interaction.

23. The method of claim 18, further comprising using said computing device to report to said first user social network attributes of all members of said social network who are in proximity to said first user.

24. The method of claim 23, further comprising using said computing device to receive from said first user a selection of one or more additional users with whom said first user wishes to connect with through said social network.

25. The method of claim 23, further comprising using said computing device to send to said first user further social attributes of one or more of selected additional users beyond the picture and name used in the introductory search results.

26. The method of claim 18, further comprising using said computing device to obtain permission of a selected user prior to revealing further information beyond an introductory picture and name when a user preference is set for such a permission requirement.

27. The method of claim 17, further comprising using said computing device to update profile information to indicate that the first and second users are connected.

28. The method of claim 18, further comprising using said computing device to update profile information to indicate that the first and second users are connected.

29. The method of claim 18, further comprising using said computing device to store communication between members and synchronize saved communication on a client side application used on devices for communication.

30. The method of claim 17, further comprising using said computing device to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location.

31. The method of claim 30, wherein updated location indicators are based on user location information reported to said computing device by any of mobile device real time location reporting technology and internet protocol address location information and saved to profiles of users.

32. The method of claim 17, further comprising:
using said computing device to permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by said first user; and

using said computing device to permit said discoverable members to have their respective devices unconnected to an internet connection service at said time of the search being conducted by said first user,

wherein any of turned off devices and disconnected devices is discoverable by said computer device as said internet connection service is configured to report said any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to said first user.

* * * * *



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(12) **United States Patent**
Alharayeri

(10) **Patent No.:** **US 10,321,267 B2**
(45) **Date of Patent:** ***Jun. 11, 2019**

(54) **LOCATION-BASED DISCOVERY OF NETWORK MEMBERS**

(71) Applicant: **WIRELESS DISCOVERY LLC**, Los Gatos, CA (US)

(72) Inventor: **Ramzi Alharayeri**, San Jose, CA (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 404 days.

This patent is subject to a terminal disclaimer.

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(65) **Prior Publication Data**

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Related U.S. Application Data

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(51) **Int. Cl.**
H04W 24/00 (2009.01)
H04W 4/02 (2018.01)
(Continued)

(52) **U.S. Cl.**
CPC **H04W 4/023** (2013.01); **G06F 16/275** (2019.01); **G06F 16/29** (2019.01); **H04L 51/00** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC H04W 4/02; H04W 4/12; H04W 8/18; H04W 48/04; H04W 64/00; H04W 88/06
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,178,511 B1 1/2001 Cohen et al.
6,243,816 B1 6/2001 Fang et al.
(Continued)

FOREIGN PATENT DOCUMENTS

DE 10149496 A1 4/2003
EP 1450282 A2 8/2004
WO PCTUS0930756 1/2009

OTHER PUBLICATIONS

Dating DNA tutorial video, iPhone App, <http://www.datingdna.com:80/public/help/tutorials/tutorial9.html>, 3 minutes, 57 seconds video, Dating DNA, LLC, Dec. 16, 2008, 1 page print out of webpage.

(Continued)

Primary Examiner — Anthony S Addy

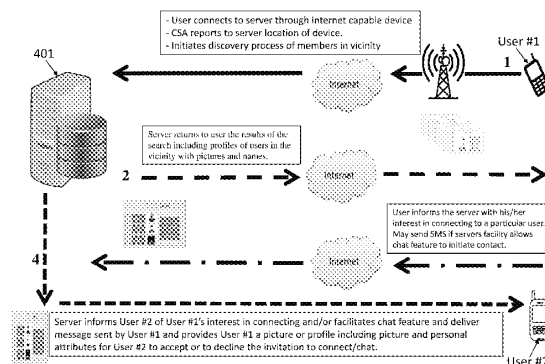
Assistant Examiner — Matthew W Genack

(74) *Attorney, Agent, or Firm* — Rahman LLC

(57) **ABSTRACT**

A technique for allowing members of the same social network using mobile devices to discover others in the vicinity by personal attributes and in specific picture(s) and name for the purpose of connecting, and the ability to use functions provided by a social network such as SMS, e-mail, chat/instant messaging, multimedia, or video by using unique hardware identification of each member mobile device and personal login information that are stored in a network server computing device; and associating the unique apparatus of the members' hardware with the members' personal profile such that when a search is initiated between members, the results contain the members' profile's picture(s), name, location and additional information as stored in the profiles. The proximity of the users is determined by static or dynamic location of the actual device location identified through mobile radio frequency location

(Continued)



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technology and internet IP information and saved in the user profile.

(56)

References Cited

U.S. PATENT DOCUMENTS

18 Claims, 9 Drawing Sheets**Related U.S. Application Data**

is a continuation-in-part of application No. 14/570,779, filed on Dec. 15, 2014, now Pat. No. 9,264,875, which is a continuation-in-part of application No. 12/351,654, filed on Jan. 9, 2009, now Pat. No. 8,914,024.

- (60) Provisional application No. 61/010,891, filed on Jan. 10, 2008.

(51) **Int. Cl.**

H04L 29/08 (2006.01)
H04L 12/58 (2006.01)
H04W 4/21 (2018.01)
G06F 16/29 (2019.01)
G06F 16/27 (2019.01)
H04W 4/08 (2009.01)
H04W 8/18 (2009.01)
H04L 29/12 (2006.01)
H04W 84/18 (2009.01)

(52) **U.S. Cl.**

CPC **H04L 51/20** (2013.01); **H04L 51/32** (2013.01); **H04L 51/36** (2013.01); **H04L 51/38** (2013.01); **H04L 67/28** (2013.01); **H04L 67/306** (2013.01); **H04W 4/08** (2013.01); **H04W 4/21** (2018.02); **H04W 8/18** (2013.01); **H04L 61/1594** (2013.01); **H04W 84/18** (2013.01)

(58) **Field of Classification Search**

USPC 455/412.1–412.2, 426.1, 432.3, 455/456.1–456.6, 457

See application file for complete search history.

7,249,182	B1	7/2007	Heinonen et al.	
7,296,036	B2	11/2007	Celik	
7,310,515	B2	12/2007	Enderlein et al.	
7,346,855	B2	3/2008	Hellyar et al.	
7,353,462	B2	4/2008	Caffarelli	
8,472,874	B2	7/2013	Tang et al.	
8,606,854	B2	12/2013	Serlet	
2004/0009750	A1	1/2004	Beros et al.	
2004/0113807	A1	6/2004	Amram et al.	
2005/0026594	A1	2/2005	Miller et al.	
2005/0053206	A1	3/2005	Chingon et al.	
2005/0076124	A1	4/2005	Enderlein et al.	
2005/0193093	A1	9/2005	Mathew et al.	
2005/0281237	A1	12/2005	Heinonen et al.	
2006/0062356	A1 *	3/2006	Vendrow	H04M 1/65 379/67.1
2006/0063548	A1	3/2006	Kim	
2006/0161599	A1	7/2006	Rosen	
2006/0234631	A1	10/2006	Dieguez	
2006/0281447	A1	12/2006	Lewis et al.	
2007/0021111	A1	1/2007	Celik	
2007/0167136	A1	7/2007	Groth	
2007/0168425	A1	7/2007	Morotomi	
2007/0229350	A1	10/2007	Scalisi et al.	
2007/0242814	A1	10/2007	Gober	
2007/0260751	A1	11/2007	Meesseman	
2008/0051033	A1	2/2008	Hymes	
2008/0108308	A1	5/2008	Ullah	
2008/0140640	A1 *	6/2008	Raff	H04L 29/06
2008/0270425	A1	10/2008	Cotgreave	
2009/0209202	A1 *	8/2009	Martini	H04W 12/02 455/41.2

OTHER PUBLICATIONS

Malley, A., "Apple seeks distance-based pairing, auto contact data patents," Webpage: http://appleinsider.com/articles/08/09/27/apple_seeks_distance_based_pairing_auto_contact_data_patents, published on Sep. 27, 2008, 2 pages.

* cited by examiner

Example of services and methods of connecting to the server via mobile CSA or internet web interface

Functions provided:

- Registration
- View/edit User Card/Profile
- Report dynamic position
- Search for members in vicinity
- Based on static or dynamic position
- Log in to see who viewed you
- Accept or reject invitations to connect
- Use features provided by service such as SMS or chat

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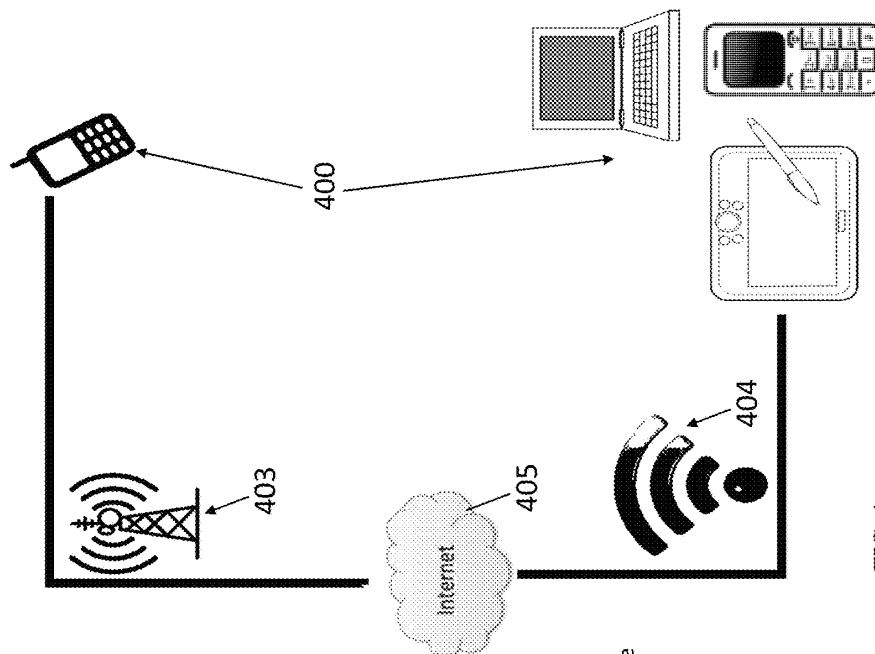
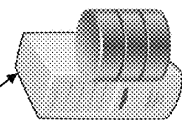


FIG. 1

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Optional: sign up using another social network credentials

Enter name

Enter password

Enter email

Enter Phone number

Enter Address

Enter additional information: bio, job, introduction statement, personal summary, etc.

Upload picture

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FIG. 2

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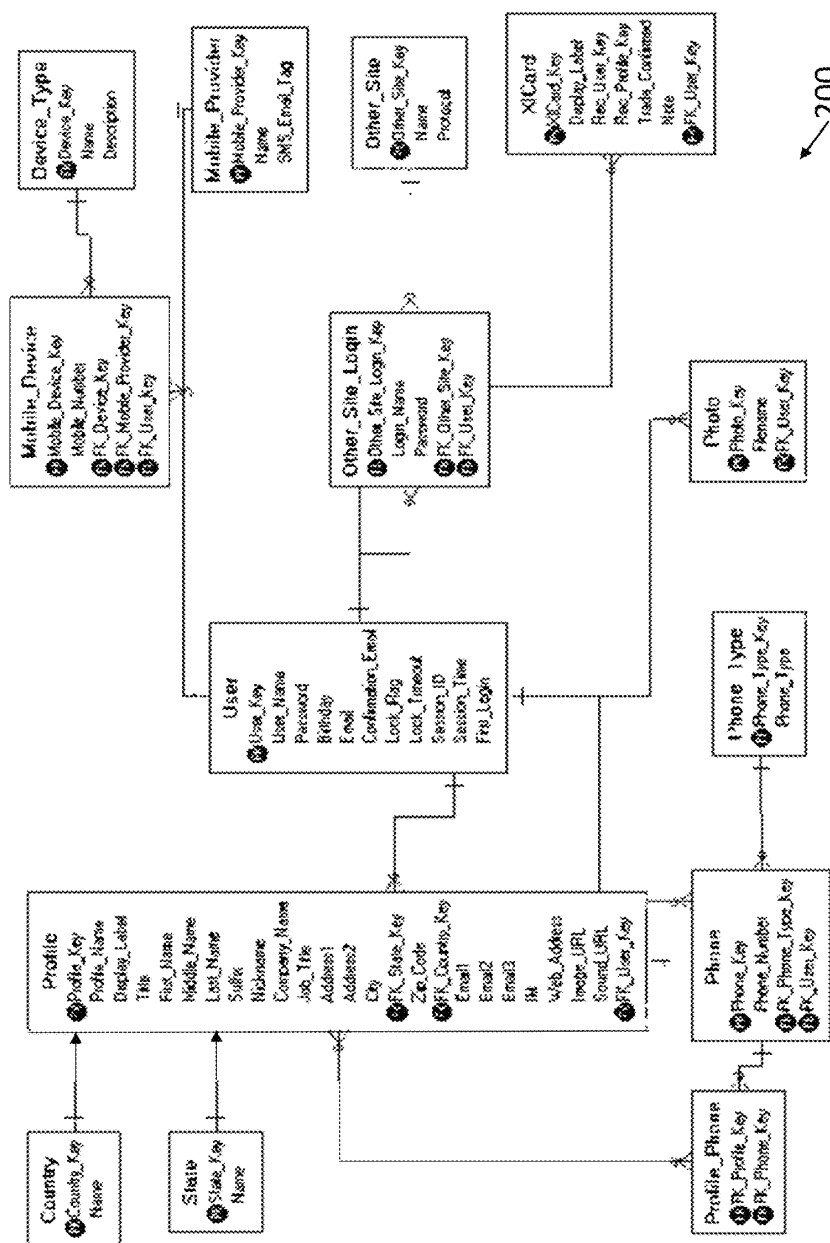


FIG. 3

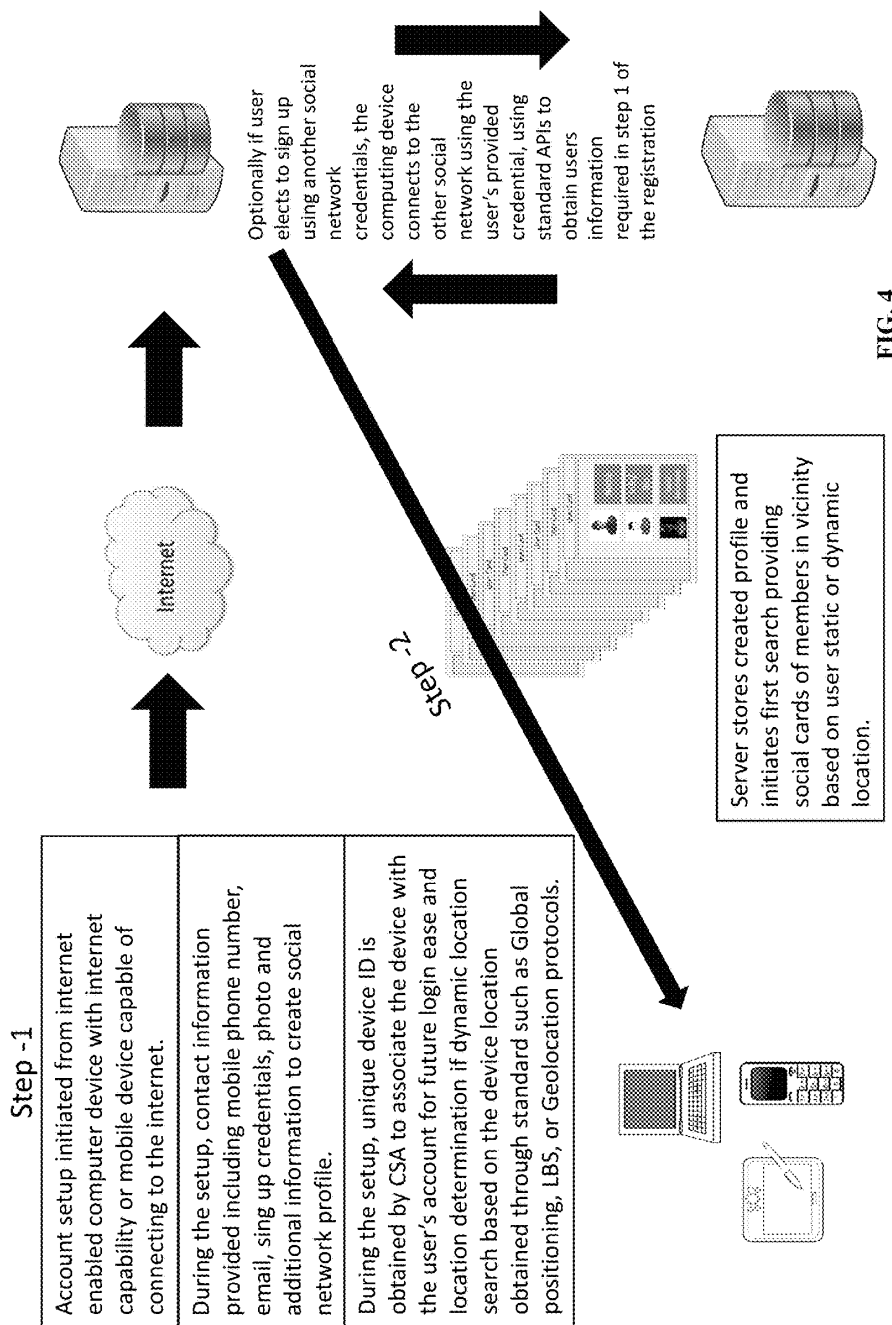
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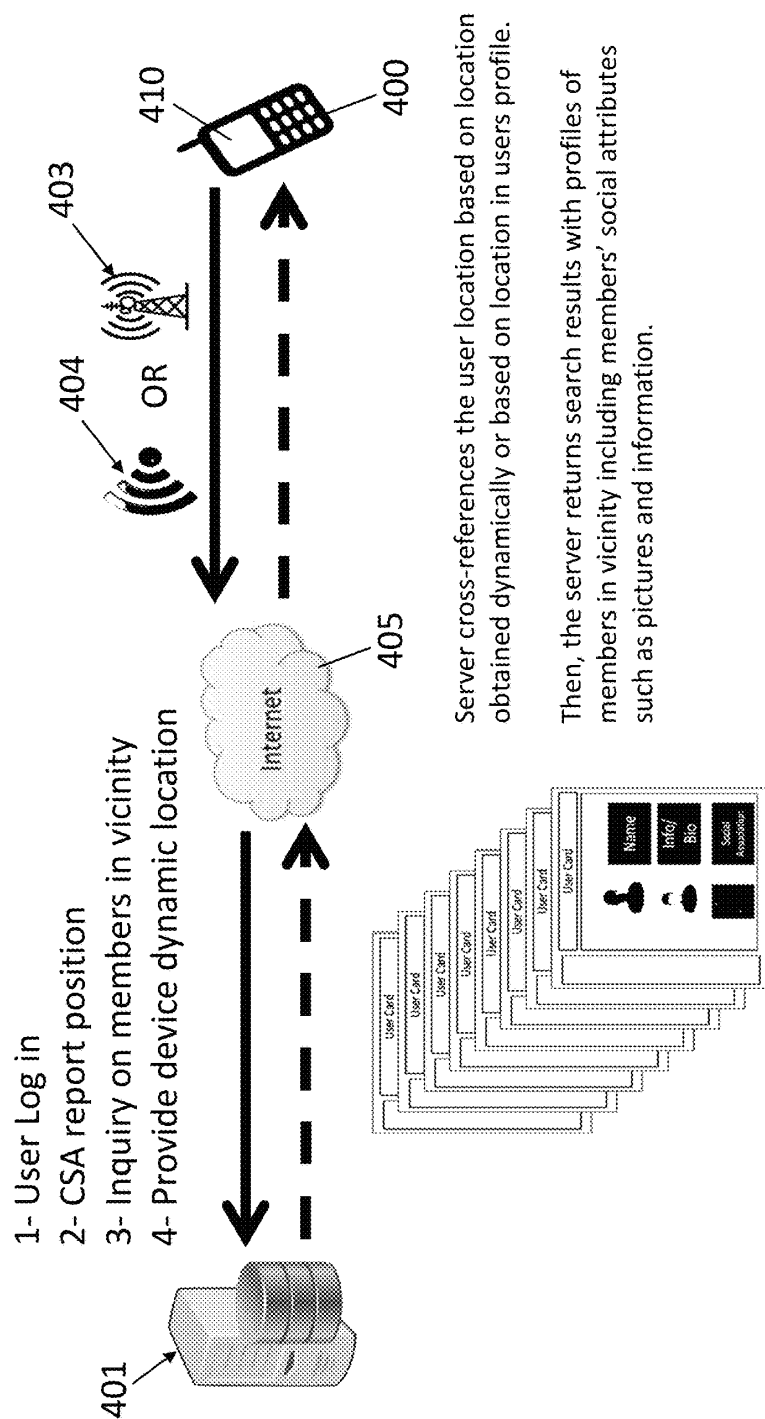
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Server cross-references the user location based on location obtained dynamically or based on location in users profile.

Then, the server returns search results with profiles of members in vicinity including members' social attributes such as pictures and information.

FIG. 5

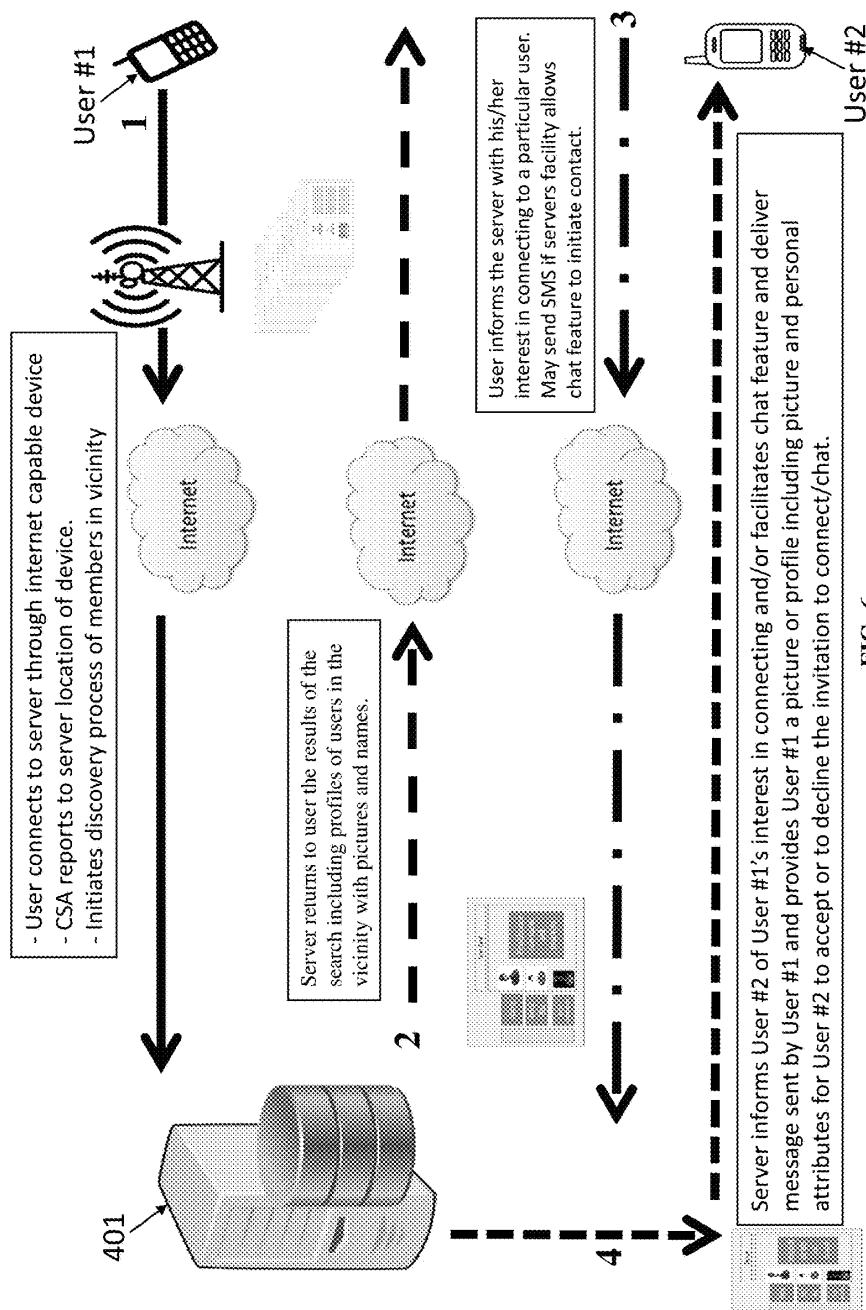


FIG. 6

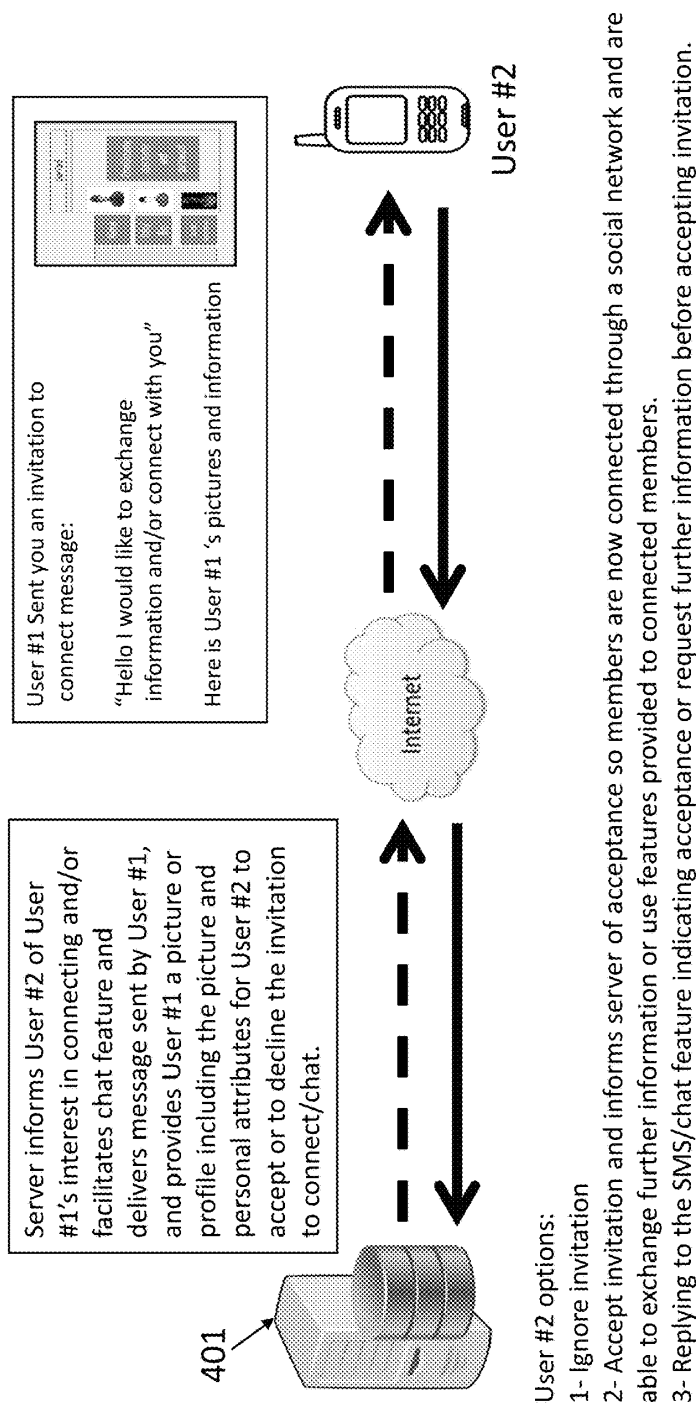


FIG. 7

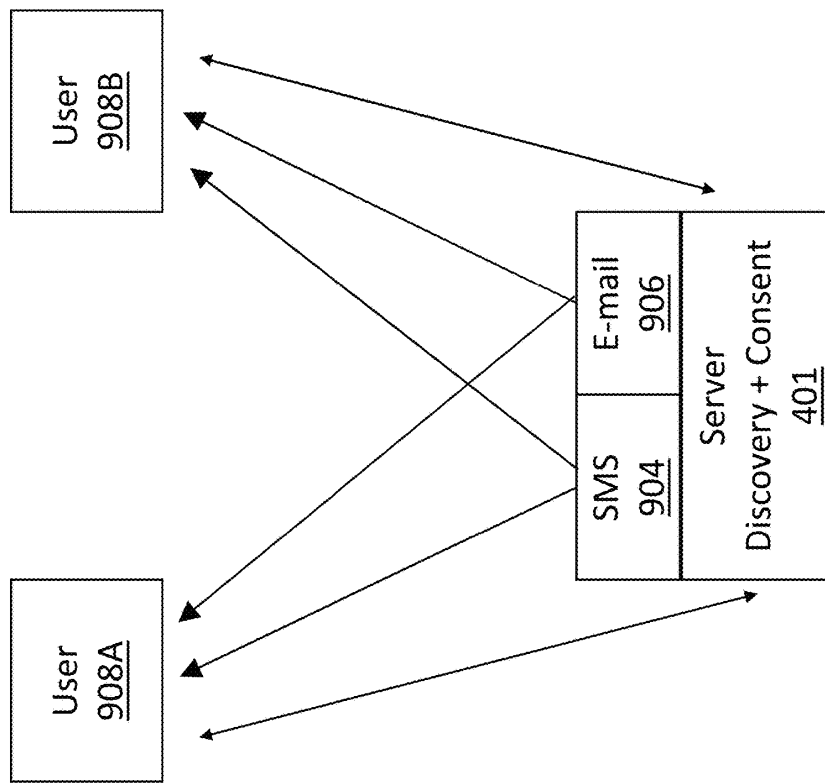
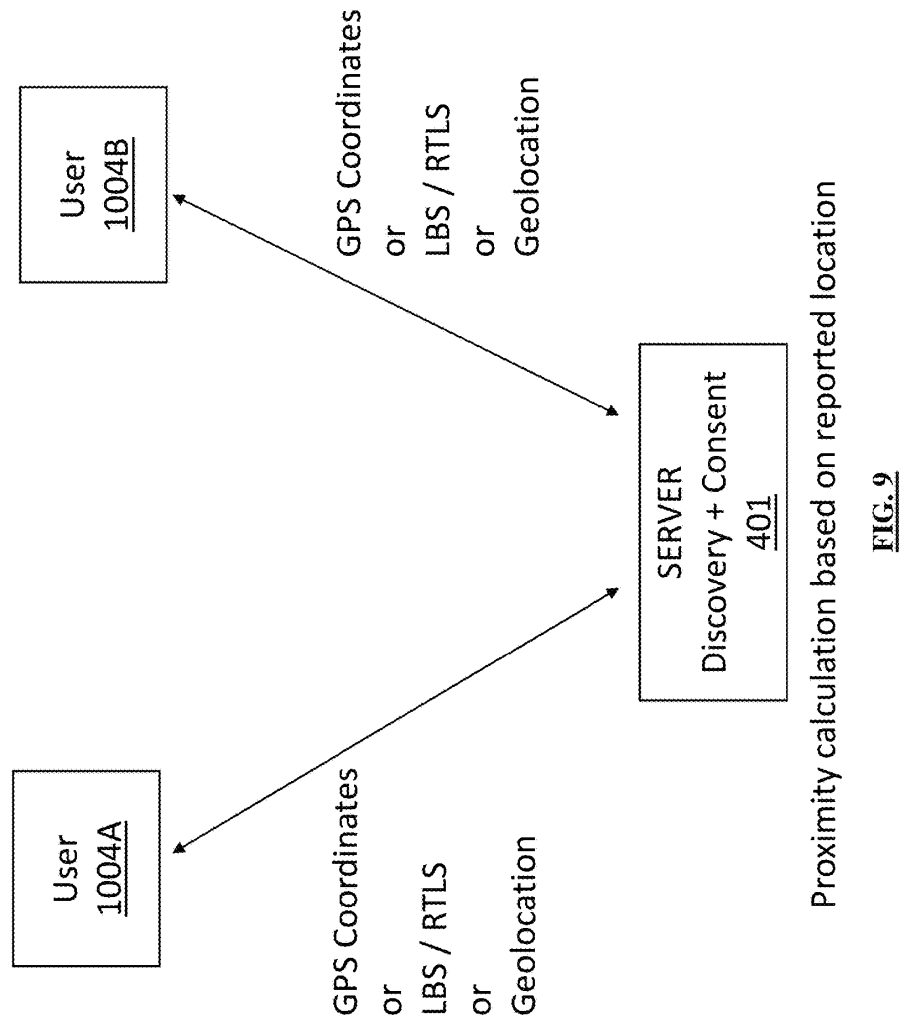


FIG. 8



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**LOCATION-BASED DISCOVERY OF
NETWORK MEMBERS****CROSS-REFERENCE TO RELATED
APPLICATIONS**

This application is a continuation of U.S. application Ser. No. 15/000,960, filed on Jan. 19, 2016, which is a continuation-in-part of U.S. application Ser. No. 14/570,779, filed on Dec. 15, 2014, now U.S. Pat. No. 9,264,875, issued on Feb. 16, 2016, which is a continuation-in-part of U.S. application Ser. No. 12/351,654, filed on Jan. 9, 2009, now U.S. Pat. No. 8,914,024, issued on Dec. 16, 2014, which claims benefit to U.S. Provisional Application No. 61/010,891 filed on Jan. 10, 2008, the complete disclosures of which, in their entireties, are herein incorporated by reference.

BACKGROUND**Technical Field**

The embodiments herein generally relate to communication systems, and more particularly to device connectivity in a communications network.

Description of the Related Art

In light of the explosive use of mobile devices, social networks and email addresses, individuals are in need of the ability to exchange customized information such as pictures, social network profiles, emails and phone numbers using their mobile devices. There are methods to exchange contact information in the form of virtual cards (Vcards). However, there is generally no form of communication using mobile devices that allows discovery by personal attributes for the purpose of exchanging contact information. Furthermore, generally there is no available technology adapted allowing mobile device users to easily exchange contacts and/or related personal information over the internet for the purpose of social interaction by way of mobile devices without limitations to hardware brands.

Available methods for contact information exchange do not typically provide discovery by attributes. Rather, these methods assign pin numbers to individuals or offer discovery by a mobile class or mobile ID. Typically, these systems require a user to operate under a common telecommunication service provider operated network. Other methods are based on Bluetooth® technology in an ad hoc mode between two devices. These methods usually work only on the same brand mobile devices due to Bluetooth® technology limitations, compatibility and security issues.

In recent years, social networks began collaboration and establishment of an API protocol which stands for Application Programming Interface that allows for social networks to connect to each other with given permission from the user, to import data or pictures from one social network to another. Yet no method generally allows members of various social networks to interexchange contact information, or offer third party solution dedicated to members connecting with others whom are not known to members based on the vicinity and common interest.

Communication between two Bluetooth-enabled devices typically requires entering a passkey or security code to allow pairing or communication between any two devices. This desire for maintaining security/privacy, inherent in the design of existing Bluetooth-enabled devices, such as a Smartphone, has imposed undesirable limitations on mobile device users who wish to interact with each other in a social setting.

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Other alternatives available for contact information exchange such as Beam technology permit the exchange to take place between similar mobile devices using an infrared signal. This particular solution is, however, limited. For example, it requires a line-of-sight between the devices and does not offer the ability to exchange information such as pictures as a personal attribute and limits the use to a similar brand of hardware transmitting in an ad hoc mode.

U.S. Pat. Nos. 6,868,451; 7,249,182; 7,440,746; 7,450,996; and 7,454,004, the complete disclosures of which, in their entireties, are herein incorporated by reference, focus on contact information storage, retrieval, Bluetooth® technology methods of profiles and exchange of contact information.

Additionally, there has been advanced ability to precisely determine mobile devices locations but all the standards in place are geared towards identifying devices locations as instruments. There are no human face associated with the searches in those standards and no links to social networks.

They are simply industry standards without connection to exploding applications and methods of mobile devices use.

Multiple advanced technologies have been added to the mobile phone industry by International Organizations for Standards to provide accurate dynamic reporting of the mobile devices. Some of the standards adopted are: LBS (Location Based Service) based on GPS (Global local positioning), RTLS Real-Time Locating System, as noted in ISO/IEC 19762-5 and ISO/IEC 24730-1 and Geolocation which is also the latitude and longitude coordinates of a particular location. Geolocation uses radio Frequency RF location, TDOA (Time Difference Of Arrival), information from cell towers to triangulate the approximate position, and Internet Protocol (IP) address among other information to determine the exact address of a mobile device or terminal connected to the internet. The terms and definitions are standardized by ISO/IEC 19762-5:2008.

SUMMARY

In view of the foregoing, an embodiment herein provides a system comprising a computing device configured to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members; a first mobile communications device communicatively linked to the computing device; and a second mobile communications device communicatively linked to the computing device, wherein the computing device provides access to stored user profile information about a first user and a second user, wherein the computing device is configured to store static locations of members and receive information identifying current dynamic locations of all members in the network, wherein the computing device is configured to calculate and determine a proximity of user locations, wherein the computing device is configured to send to the first user upon inquiring of other members in the network of the first user, personal attributes of all other members based on proximity calculations to select members that the first user may wish to connect with, and to send to the second mobile communication device an invitation on behalf of the first user for the second user to accept connecting with the first user, wherein the computing device is configured to communicatively connect the first user and the second user, and wherein the computing device is configured to locate information about the second user from a social network storage file of the second user, and transmit this information to the first mobile communications device.

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The computing device may be operable to disclose social network attributes of the first and second users for connecting members. The computing device may be configured to report to the first user social network attributes of all members of a social network who are in proximity to the first user. The computing device may be configured to receive from the first user a selection of one or more additional users with whom the first user wishes to connect with through a social network. The computing device may be configured to send to the first user social attributes of one or more of selected additional users. The computing device may be configured to update profile information to indicate that the first and second users are connected. The computing device may be configured to store communication between members and synchronize saved communication on a client side application used on devices for communication. The computing device may be configured to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location. Updated location indicators may be based on user location information reported to the computing device. The computing device may permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by the first user, wherein the computing device may permit the discoverable members to have their respective devices unconnected to an internet connection service at the time of the search being conducted by the first user, and wherein any of turned off devices and disconnected devices may be discoverable by the computer device as the internet connection service is configured to report the any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to the first user.

Another embodiment provides a method comprising using a computing device to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members; communicatively linking a first mobile communications device to the computing device; communicatively linking a second mobile communications device to the computing device; using the computing device to provide access to stored user profile information about a first user and a second user; using the computing device to store static locations of members and receive information identifying current dynamic locations of all members in the network; using the computing device to calculate and determine a proximity of user locations; using the computing device to send to the first user upon inquiring of other members in the network of the first user, personal attributes of all other members based on proximity calculations to select members that the first user may wish to connect with, and to send to the second mobile communication device an invitation on behalf of the first user for the second user to accept connecting with the first user; using the computing device to communicatively connect the first user and the second user; and using the computing device to locate information about the second user from a social network storage file of the second user, and transmit this information to the first mobile communications device.

The method may further comprise using the computing device to disclose social network attributes of the first and second users for connecting members. The method may further comprise using the computing device to report to the first user social network attributes of all members of a social network who are in proximity to the first user. The method may further comprise using the computing device to receive

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from the first user a selection of one or more additional users with whom the first user wishes to connect with through a social network. The method may further comprise using the computing device to send to the first user social attributes of one or more of selected additional users. The method may further comprise using the computing device to update profile information to indicate that the first and second users are connected. The method may further comprise using the computing device to store communication between members and synchronize saved communication on a client side application used on devices for communication. The method may further comprise using the computing device to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location. The updated location indicators may be based on user location information reported to the computing device. The method may further comprise using the computing device to permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by the first user; and using the computing device to permit the discoverable members to have their respective devices unconnected to an internet connection service at the time of the search being conducted by the first user, wherein any of turned off devices and disconnected devices may be discoverable by the computer device as the internet connection service is configured to report the any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to the first user.

These and other aspects of the embodiments herein will be better appreciated and understood when considered in conjunction with the following description and the accompanying drawings. It should be understood, however, that the following descriptions, while indicating preferred embodiments and numerous specific details thereof, are given by way of illustration and not of limitation. Many changes and modifications may be made within the scope of the embodiments herein without departing from the spirit thereof, and the embodiments herein include all such modifications.

BRIEF DESCRIPTION OF THE DRAWINGS

The embodiments herein will be better understood from the following detailed description with reference to the drawings, in which:

FIG. 1 illustrates communication links to/from mobile devices and a network-based server; according to an embodiment herein;

FIG. 2 illustrates an example of a computer or mobile device, and a generated display for registering with a service, according to an embodiment herein;

FIG. 3 illustrates an example of a database schema/structure for maintaining personal information about a user (member) registered with the service, according to an embodiment herein;

FIG. 4 is a flowchart associated with the creation of a social card and a user account/profile to initiate the use of the service of discovering others in the vicinity with personal attributes such as pictures and names, according to an embodiment herein;

FIG. 5 illustrates a discovery process flowchart, according to an embodiment herein;

FIG. 6 is a flowchart for a discovery process between users, according to an embodiment herein;

FIG. 7 is a flowchart depicting the processing of a user initiating discovery and showing interest to connect to a

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second user where all communication is managed by the server, according to an embodiment herein;

FIG. 8 illustrates the establishment of the communication between users, according to an embodiment herein; and

FIG. 9 illustrates an arrangement in which a server receives GPS/LBS/GEOLOCATION coordinates from users, compares these coordinates to determine proximity, and informs the users of the proximity, according to an embodiment herein.

DETAILED DESCRIPTION

The embodiments herein and the various features and advantageous details thereof are explained more fully with reference to the non-limiting embodiments that are illustrated in the accompanying drawings and detailed in the following description. Descriptions of well-known components and processing techniques are omitted so as to not unnecessarily obscure the embodiments herein. The examples used herein are intended merely to facilitate an understanding of ways in which the embodiments herein may be practiced and to further enable those skilled in the art to practice the embodiments herein. Accordingly, the examples should not be construed as limiting the scope of the embodiments herein. As used herein, the terms “a” or “an” are used, as is common in patent documents, include one or more than one. In this document, the term “or” is used to refer to a “nonexclusive or” unless otherwise indicated.

The embodiments herein relate to members discovering other members in the same social network who are in the vicinity by personal attributes such as picture(s), name and location. The personal attributes are stored in users' profiles on the social network server and are associating with each member's unique hardware identification and log-in credentials. Discovering other members would be for the purpose of exchanging personal information, connecting to each other through the social network services and communicating through SMS, E-mail, chat/instant messaging, text, multimedia, or video features that maybe offered by the same social network.

According to one aspect of the embodiments herein, mobile device users sign up or register with a service through website or using their mobile device. For ease of registration, optionally the users can sign up using existing other social network credentials and import pictures from this second social network for the new account creation if this other social network allows porting of users' information and personal attributes such as picture(s) and name. Users may be required to provide additional information if personal attributes such as picture and name were imported via API from another social network to complete the sign up process. Signing up through a mobile device will require that the user clearly have downloaded the CSA (Client Side Application) from either a depository third party application provider or request from the service website to send to his/her mobile a link allowing the download of the application. Referring now to the drawings, and more particularly to FIGS. 1 through 9, where similar reference characters denote corresponding features consistently throughout the figures, there are shown preferred embodiments.

FIG. 1 illustrates how communication between mobile users 400 and the server 401 is conducted. FIG. 1 is directed to an arrangement in which a server/computing device 401 communicates bi-directionally with user devices 400 by way of a cellular base transceiver station (BTS) 403 through a standard that also provides separate facilities (not shown) for transmission of digital data. In certain embodiments, com-

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munication between the member's mobile devices and the server goes through a BTS 403, and communicates according to a packet-based telecommunications protocol such as GPRS, 3G, 4G, LTE or any alternative data technology. In FIG. 1, communication links to/from mobile devices 400 and a network-based server 401 are provided; e.g., internet server, over a BTS 403 using standard communication protocols that provide separate facilities for transmission of digital data, or through wireless connection 404 capable of connecting the user to the internet 405. As depicted, the mobile devices 400 may communicate through the server 401 to discover other members in the vicinity based on static location provided during sign up or dynamic location obtained from LBS, GPS, or Geolocation standards.

A list of example of services provided to various devices and mobile phones 400 regardless of method of communication used to connect to the server 401 via the internet 405 include registration, view newly created social card/profile, edit profile including adding multiple pictures, obtaining user location dynamically based on standard mobile communication protocols, search for members in vicinity, access additional features provided by social network such as chat/sms view members who discovered the user, accept or reject invitations to connect, and access any features provided by a social network.

The user provides information by filling out an on-line profile through a web based interface or interface provided by the CSA, including uploading graphics or pictures. An example of an electronic generated sign-up screen is shown in FIG. 2. Additional aspects of the registration process include creating a social card or profile, which is intended to be shared with other users or be discovered by other users. The user's profiles are available for people in the vicinity to view, via a mobile data connection to internet or direct internet connection from the mobile device to local wireless network.

FIG. 2, with reference to FIG. 1, depicts an example of a computer or mobile device 100, and generated display 101 for registering with a service. This service may provide a user with a network-based storage for personal contact information, creation of a custom social card to send to discovered, or discovering, users who are also members of the service, for the purpose of providing personal contact information including personal attributes such as picture(s) to other users and for accessing personal contact information including personal attributes such as picture(s) by of other users of the service. The service may be part of a social network. The registration may offer option to sign up using another social network credentials for ease of registering and authentication. The CSA will obtain a mobile device unique ID upon complete sign up from a mobile device 100 or upon first access from a mobile device 100.

As mentioned above, the registration process also includes downloading of the CSA, where the CSA resides on the mobile device 100, and enabled to communicate directly with the service, through a provided internet connection, to synchronize/update contacts and to manage communication with contacts or potential new contacts, access account information via username/password, or phone ID, send search requests for information about users in the vicinity, send invitations, accept, exchange deny requests for exchange of information, obtain instances of the server addresses, allow the user to edit his/her own profile, update photos or information or add additional photos or information, etc. The CSA connects to the server through internet connection provided by the mobile device 100.

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Personal and other user information can also be added by way of the CSA for storage on a server, including hobbies, business associations, or personal information as examples. This and other information can also be added for storage on the server means other than the CSA, such as the user's personal computer, a dedicated kiosk, or other means for accessing the server through the internet. In order to take advantage of the functionalities provided by the service, the member of the service ("member") should have a mobile communication device that provides separate facilities (besides voice transmission) for transmitting digital data. This allows a mobile phone to act like any other computer over the Internet, sending and receiving data via the Internet Protocol.

One format for storing information about a user/member of the service is shown in FIGS. 2 and 3. Depicted herein are some of the types of user information that may be stored and made accessible to the user at the server. Users may provide personal attributes such as name, address, and a picture. Information about the user's mobile device 100 may include the make, model, and phone number.

FIG. 3, with reference to FIGS. 1 and 2, illustrates an example of a database schema/structure 200 for maintaining personal information about a user (member) registered with the service. The information about the member may include, for example, his/her mobile device attributes such as the device key, mobile telecommunications provider; the mobile device type; the member's profile, e.g., name, address, etc.; stored photo(s) of the user; country/state where the member resides; and other information.

The service provided to users may be operated/accessible under a centralized computer system ("server"), which may include but not limited to four components: 1) Graphical user interface, providing an interface to members of the network to sign up, input/edit profile information, etc. 2) A scripting language designed for producing dynamic web pages and mobile language web pages. 3) A comprehensive data base that includes user's information, for example as discussed above and shown in FIG. 1. Computing capabilities such as calculating proximity of members based on static location information in database or dynamic location info obtained through the CSA.

FIG. 4, with reference to FIGS. 1 through 3, is a flowchart depicting a process for registering with the service: Account set up and information provided through a web-based User Interface 101, e.g., such as shown in FIG. 2; or mobile device CSA. The user optionally has the flexibility of signing up to the service and import personal attributes including picture, name and additional information by using a second social network credentials. The CSA collects characteristics from the mobile device such as a phone number or IMEI (international Mobile Station Equipment Identity) for the purpose of associating the mobile device 400 with a user account maintained at the server 401. This association between the unique ID such as IMEI, and the user account is used to report the mobile device location to the server dynamically and authenticate user with device used.

To completely utilize the mobile features provided by the service including dynamic search of members in vicinity, the user installs the CSA to the mobile device 400 that in addition to reporting location to the server, enables the user to update, replace, revise the social profile or personal attribute information, modify, hide or publish profile information (at the server) as contained in the user's contact information; e.g., the information contained in the user's profile which may be sent when the user initiates discovery

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process. Furthermore, the CSA allows the user to indicate interest in connecting with a member, or the user is discovered by others members searches and communicate to other members though features such as SMS, chat, text, and other features.

FIG. 4 illustrates how the server 401 may associate each mobile device 400 with a member account of the service using a unique ID such as IMEI. During the installation process, the server 401 receives from the CSA required Unique ID such as IMEI, or phone number. FIG. 4 is a flowchart associated with the creation of a social card and a user account/profile to initiate the use of the service of discovering others in the vicinity with personal attributes such as pictures and name. As well, it now allows other users to discover the new created account.

The CSA collects unique mobile device ID during the registration to associate with the newly created member profile for future location reporting and authentication for secure and future log in if needed. Once an account is created, the device 400 is not required to be powered on to be discovered. And the last location reported to the server 401 would be considered the current location OR the server 401 may elect to revoke last location reported and identify the user location to be the location provided during sign up as the default location known to the user.

FIG. 5, with reference to FIGS. 1 through 4, illustrates a discovery process flowchart where a user connects to the server 401 using the CSA on the mobile device 400 which reports the user location and returns the search results after cross referencing the user location with other members to determine proximity. The server 401 shares with the inquiring user pictures and names and possible profile information so user can select from the list members to connect to.

When a user connects to the server 401 to inquire about other members in the vicinity, the server 401 returns the search results based on proximity and provides personal attributes of all members in the vicinity based on last location known regardless of those reported members are connected at the time to the service or not. Proximity can be a default value set by the server 401 to be within feet or miles, etc. and may allow users to select the value of that proximity for any search inquiry. The user can modify the search to adjust the distance to set parameters for the proximity or even request a search in proximity of a specific point like a convention center or a particular town.

The CSA connection to the server 401 by the device 400 may be used to accomplish three tasks: First, to connect to the service. Second, to provide update on location. Third, to inquire on members in the vicinity based on the current location. FIG. 5 illustrates the discovery of the users using the requesting user's mobile device 400 first to log in and associate the device with the user as well as report the location and initiate a request to discover members in the vicinity. The requesting user's resident CSA receives from the server 401, as a result, the profiles including pictures of all members in the vicinity.

The server 401, after receiving an inquiry on members in the vicinity, transmits back to the requesting user mobile device 400 the pictures and names, or other information, for each of the devices in the vicinity, which are then displayed on the inquiring user mobile device screen 410. The discovery process may thus include the showing of personal or detailed information that a member may wish to have displayed during the initial discovery step, rather than merely a device ID or address, device type, etc. At this point the requesting user has received a list of pictures and names

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which he/she can now select from the mobile device 400 if further connection is desirable.

In one example, in a first step of the discovery process, a user logs in the service and initiates an inquiry on members in the vicinity. The CSA reports to the server 401 the mobile device's 400 current location based on available cellular location information or IP address if the user is logged to the service via local internet connection. In the second step, the server 401 cross references the location of the user by other users know locations based on static data in the members profiles, and, current dynamic location based on latest reported location update obtained. Once the proximity calculation is complete, the server 401 returns to the first user the results of the search and provides personal attributes including pictures of all members in proximity of the first user.

FIGS. 6 and 7, with reference to FIGS. 1 through 5, show in further detail how users may discover each other, in four steps:

Step 1: The user connects to server 401 through an internet capable device belonging to User #1, the CSA reports to server location of the device belonging to User #1 during the log in process, the user then initiates discovery process of members in vicinity by sending an inquiry to the server 401.

Step 2: The server 401 receives the request from User #1 CSA, the server 401 cross references the user location based on location obtained dynamically or based on the location in the user's profile. Then, the server 401 returns the search results with profiles of members in vicinity including member's social attributes such as pictures and information.

Step 3: The first user reviews the search results and informs the server 401 with his/her interest in connecting to a particular second user (User #2).

If applicable, User #1 may send to User #2 a message/email/sms through the server 401 if the server's facility allows such features to initiate contact.

Step 4: The server 401 informs User #2 of User #1's interest in connecting and/or facilitates a chat feature and delivers the message sent by User #1, and provides User #1 a picture or profile including the picture and personal attributes for User #2 to accept or to decline the invitation to connect/chat.

FIG. 6 is a flowchart for a discovery process between users (User #1 and User #2) where User #1 connects to server 401 through an internet capable device and CSA reports to server location of the connected device. Based on the reported location or location stored in user's profile, the server 401 returns to the User #1 profiles of all users in the vicinity based on proximity with pictures of each user.

If the user (e.g., User #1) elects to connect with any of the suggestions, the user (e.g., User #1) indicates this and the process of informing the other member (e.g., user #2) is managed by the server 401. No direct contact occurs between users at this point and will not unless the users elect to exchange personal information such as mobile numbers to connect outside of provided service and features. This managed communication by the server 401 insures privacy and allows users to reject connections or terminate conversations without having to worry about direct connections potential issues. The communication between the server 401 and CSA are conducted via a common internet protocol suite which includes an application layer, transport layer, internet layer, and link layer.

FIG. 7 shows a further example of notification to discovered users alerting them to an exchange request. The notification shows the other users' personal attributes including

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name and picture. FIG. 7 is a flowchart depicting the processing of a user initiating discovery and showing interest to connect to a second user (e.g., User #2) where all communication is managed by the server 401, according to an embodiment herein. FIG. 7 describes additional aspects of notifications and responses options to requests for exchange of electronics coordinates, personal information or connecting. All communication between users for the purpose of connecting members after the discovery is managed by the server 401.

User #2 (the discovered user) has the option of accepting the invitation, ignoring/declining or engage in services provided by the server 401 such as chat or sms with or without accepting connection with User #1. Since all communication between members is managed by the server 401, the server database 401 may store any contact information exchanged and add it through a synchronization method with the CSA as well as keep the history of any conversations/SMS between the members.

The CSA includes feature such as storing edits to profile or communication between the members and synchronizes to the server database 401 for storage once connection between CSA and server 401 is established. This dual storage feature allows the user to restore communication between users on a new device if the device in use is lost or damaged as well as restoring all account information.

In the case where a user switches mobile devices, all the user has to do is to install the CSA on the new device and login with his/her credentials. Once an internet connection is established between the new device CSA and server 401, and user credentials; the server 401 synchronizes all stored information to the new device, and the new installed CSA reports the new device unique hardware identification.

A server 401 is able to facilitate communication between the two users and may provide additional features such as the ability to chat via SMS or email service and other services as illustrated in FIG. 8, with reference to FIGS. 1 through 7. In particular, FIG. 8 illustrates the establishment of the communication between users 908A, 908B, such as for example SMS 904, E-mail 906, chat/instant messaging, in the form of text or multimedia, video, etc., between consenting users 908A, 908B via a server 401 that initiates discovery and consent for the users 908A, 908B to exchange data.

The embodiments herein provide a medium for near real-time exchange of contact information, unlike E-mail, SMS or other modes of communication between mobile devices. In this sense the user experience is enhanced over the exchange of E-mail or texting among phones, in at least three ways. First, a requesting device is not limited to conversing with only members that he/she can contact through a known e-mail address, phone number, etc. Second, the exchange may proceed simply by initiating discovery and/or responding to a discovery request. Third, the exchange can occur among multiple members of a service at the same time.

The centralized computer system ("server") 401 may include, or be associated with, an SMS server platform 904 or E-mail platform 906 that provides a corresponding channel of communication between the users 908A, 908B. The users 908A, 908B are shown communicating directly with one another via SMS platform 904 and/or E-mail platform 906, facilitated by server 401.

Members can contact other users, through offered types of communication between them, for example SMS, E-mail, chat/instant messaging, in the form of text or multimedia, video, etc., can also be facilitated. This is depicted in FIG.

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9, with reference to FIGS. 1 through 8, and which illustrates an arrangement in which a server 401 receives GPS/LBS/RTLS/GEOLLOCATION coordinates from users 1004A, 1004B, compares these coordinates to determine proximity, and informs the users 1004A, 1004B of the proximity.

In FIG. 9, server 401 is shown receiving GPS coordinates, or LBS or RTLS Location Services information, or Geolocation information, from Users 1004A and 1004B, comparing these coordinates to determine proximity, and informing the users of the proximity. Informing one user of another's proximity can be contingent upon consent of the users 1004A and 1004B, as obtained above, and can be performed in gradations, for example initially sending limited information of one user to another, then increasing the delivered information and establishing contact depending on consent. In certain embodiments, the participating members 1004A and 1004B report their locations to the server 401, for example periodically, and the server 401 maintains a record of and updates these reported locations, and provides reports to certain users, for examples to those belonging to a common social network. Members' profiles that are connected can be updated to reflect such connection information by the server/computing device 401.

In certain embodiments, the CSA, residing on the mobile device 400, may have but is not limited to the following software functionality: authentication and credentials storage capabilities.

An "authentication" portion requests authentication parameters from a user (ID or user login name and password); connects to an instance of server 401; sends user authorization information to the server side using ID or user name and password; displays a reason for denied access in case of incorrect login; and exits from the software in case of a preset number of incorrect logins; allows a user to change the password; and downloads profile information from the server 401. The CSA has the ability to store log-in credentials such as user name and password on the device 400 and transfer the credentials to the server 401 for storage in user profile database.

Another form of authentication is to insure that the unique mobile ID obtained and on record is associated with the user's log in credentials and matches user stored information. Optionally, and with user permission, the service may connect to another social network database through APIs, which are application programming interfaces, to access other social network users attributes such as name and picture.

The methods of connecting an application programming interface would differentiate from one social network to another and be proprietary to the respective social networks. An application programming interface (API) is a set of routines, protocols, and tools for building software applications for connecting one network to another network. An API expresses user attributes such as name, picture, and any additional information on the user. The API expresses as well the social network operations, inputs, out-puts, and underlying types.

The embodiments herein recognize the previously listed advancements, while the application fills the gap between locating devices and how to humanize the devices by associating personal attributes to each device so when a search is done, a face is found rather than a hardware ID number. None of the conventional standards/technologies used to locate mobile devices specified or provided methods allow the ability to associate devices with personal attributes or profiles that include picture and name. Associating personal attributes such as pictures and personal attributes

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allow users to identify other members and select members whom they wish to exchange contacts with or connect with through the social network.

Certain embodiments herein provide a system and method that allows individuals to use their mobile phones to discover others in the vicinity by personal attributes, such as by photos and name, after which, the two parties can exchange information through the social network via an internet connection bypassing the inherent limitations of same brand devices technology; e.g., security/privacy limitations and compatibility issues that limit or prohibit ad hoc communication.

The system includes a network-linked storage facility that collects information provided by members of the group; e.g., members of the social network, along with personal attributes in a data base hosted by a centralized computer with internet connection. The system associates a member's phone ID to the member's account/profile. The phone association takes place when the user downloads a client-side application which collects, among other things, a unique phone characteristic such as a standard IMEI (International Mobile Station Equipment Identity) or serial number of the mobile device or a unique identifier to associate the member with the account.

According to yet another embodiment, a system for exchanging information among members of a group is provided, such as members of a social network service, and includes an internet based server having a registration portion. After a user has registered online with the service, the server may send the application to the mobile device to download a client-side application into the mobile device. Alternatively, the user may download the CSA from the server or a third party depository offering the service to download the CSA.

A registration process is complete when a user creates a customized social card or profile with the social network, and the user may thereafter see or edit his/her social card on the mobile device or online through a device that connects to the internet. Any changes to the user's card or profile will be updated on both, the server of the social network and the CSA.

Another embodiment provides profiles that can be created by importing some or all information from a separate social network that offers API connections to users' information. This provides ease for registering and authentication to associate the discovery service with another social network that does not or may not offer such a discovery service of members in vicinity.

According to an embodiment herein, the process of discovery and exchange of contact information requires a CSA (Client Side Application) that is installed on the users' mobile devices and can connect users to the service computing device through an internet connection. The CSA functions include but are not limited to, obtaining user credentials for logging into the social network, obtaining unique hardware ID to link to user account, allowing user to edit profile and personal attributes, manage communication with contacts and access features of the service provides such as SMS, text, voice, multimedia and communications with other members.

The vicinity and determination of the proximity is based on either static or dynamic user location. The static location is what the user enters during registration and saved in his/her profile, or obtained through API from another social network if the user elected to sign up to the service with another social network credentials. The dynamic location is a data point entry in the user's profile location which is

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constantly updated based on information obtained each time the user logs into the social network. The dynamic updated information is obtained through location standards such as GPS, LBS, RTLS or Geolocation services.

The embodiments herein fill a gap left by the existing standards and technologies when it comes to the actual discovery process and exchange of contact information over the internet bypassing ad hoc communication and compatibility and provides personalized way of discovering people by pictures primarily.

According to another embodiment herein, a method for meeting people including discovering people; e.g., viewing their pictures, names, or other personal information, and selecting one or more people to send an invitation to, is provided. The invitation may take the form of a social card, V-Card, or other manner of engaging another person in a social atmosphere like quick SMS or flag that there is interest of connecting, or even a business setting such as a meeting, trade show, conference, etc.

In one aspect, the embodiments herein provide a system and method that enables discovery of others who also desire social interaction, but without being constrained by hardware compatibility issues inherent in mobile devices by different manufacturers. According to this aspect of the embodiments herein, mobile device users (or users) can offer to other, nearby users, their pictures or other information as part of a discovery process, save contacts received from other users, and keep contacts stored on a mobile device up to date by upload/download of personal information through a networked storage capability provided by the computing device; e.g., an internet-linked storage device accessible through a cellular phone network.

For purposes of explanation, the following definitions are adopted. A "requesting user" is the person or person(s) who is connected to the service of the social network through the internet using an internet-enabled mobile device, initiates a discovery process; e.g., search for other members in the vicinity, and a "discovered user" is the person or person(s) belonging to the same social network and may or may not be connected at that time to the service but in the vicinity of the requesting user and his/her personal attributes provided as a result of the initiated inquiry to the requesting user.

In one example, two persons, a requesting user and discovered or discoverable user are members of a social network which allows the members to communicate with each other as part of the social network service. The social network computing device includes a server that stores personal attribute information including static location, capable of obtaining dynamic location data and capable of calculating the proximity of members based on location regardless if it's static or dynamic. A standard discovery process may be initiated by the requesting user for other members in the vicinity. Once the user logs into the service with the mobile device using the CSA (Client Side Application), the computing device obtains location of the user based on LBS, RTLS or Geolocation, etc.

The computing device of the social network cross-references the user's location with registered members in the vicinity of the first user and returns the results by disclosing personal attributes including pictures and names of all members in the vicinity based on proximity location. The user who initiated the inquiry can select from the results returned any discovered user he/she wishes to connect with and send a form of invitation to connect using network available tools such as email, sms, text or any customized invitation form. The invitation to connect to the inquiring user would include his/her personal attributes including

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picture and name. The discovered member who received invitation can accept, ignore or decline connecting with the inquiring user.

The communication between requesting and discovered users may then proceed through services provided by the social network computing device, thereby bypassing the limitations of communication over one protocol, network limitation/fees, or devices incompatibility. As an example, one member can be connected to the service of the social network and the computing device through internet service over cellular signal while the other person could be connected to the same service through WiFi® signal that provides internet access.

The computing device can be configured to frequently push updates of a user's contacts to his/her mobile device, and maintain backup of contacts and information of each user. Additionally, the computing device of the social network with the storage service may be configured to initiate an exchange of contact by suggesting to members recommendations on other members to connect with that could be a good fit to the user. The computing device can share with the user personal attributes of other members in the vicinity such as pictures and information of potential matches to connect with. The computing device is capable of cross-referencing members' locations and calculating the distance between members to eliminate members that are not in close proximity or in vicinity of the user conducting the search.

Users have the ability to customize their search proximity calculation by setting the distance and area for search. As an example, a sales person may look for members in the vicinity of 20 miles from him to introduce himself to. Alternatively, a person who is missing a convention in NYC while he is in California, may start search for members in NYC while he is in California to discover people he wishes to connect with. The recommendations based on vicinity are based on user's static location in a profile or dynamic updated location obtained from user's last log into the service.

According to another aspect of the embodiments herein, a system and method is provided that allows users of the social network, or more generally a database service, to create custom social cards that include social profiles, email information, phone numbers and/or multiple pictures as a personal attribute. In one embodiment, a social card associated with the discovered user may be viewed when a requesting user initiates an inquiry, this unique experience puts a human face on each phone detected during the search rather than an uninteresting Bluetooth® address which is current method of returning search in vicinity now using short range wireless signal.

For instance, the social card may include a picture, a name, location, personalized icons or card designs, etc. Furthermore, the requesting user may receive a plurality of such social cards when there are many members of the service within the short range network or vicinity, or geographic area as defined by the user who is conducting the search.

If the requesting user elects to make contact with one or more of the members discovered in the vicinity, he/she may send an invitation including sharing the requesting user's card or custom profile containing a picture or pictures of the requesting user with a personalized message intended to spark an interest with the discovered user. The discovered user may then respond by accepting a connection, denying or utilize other services provided by the social network such as SMS, chat or email between users.

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According to another aspect of the embodiments herein, a method for discovering a person over a type of communication network is provided, and then the method permits communicating with that person over a second type of communication network after initial acceptance; e.g., using a WiFi® network to connect to the internet and discover the person. The first member can then continue communication with the second member later on a cellular phone network that provides data connection to the internet. This means that as long as both members connected to the service via an internet connection, they can communicate regardless of proximity or type of device each member may have or type of method used to connect to the internet.

The server is capable of providing information to members mobile devices phones not capable of exchanging data via Bluetooth® or the related ad hoc network communication protocol, and/or not connected to a cellular phone network via a common cellular phone network provider, or provider plan as long as the device has capability and is connected to the internet.

The method may further include the step of selecting and exchanging information based on pictures received as a result of the promotional message by the service to encourage members to connect to others in the vicinity. The mobile device users are members of a social network service that operates/maintains the server.

According to another embodiment, a server is provided that is capable of providing a communication between a first and second mobile phone user through the server and inform each member that they received message or invitation from others members. Notifications to mobile device users about invitations or messages received can be sent to users by SMS or the CSA notification messaging services.

In certain embodiments, unique member identifiers comprising a Bluetooth® device address, or a WiFi® address, or a main component address such as IMEI, which is the international mobile station equipment identifier, is associated with the device and member login credentials; and are stored on the server associated with the user's profile/social card.

This authentication is important so when a search is conducted on a mobile device and hardware ID is returned as search results from standard protocols, the embodiments herein associate a profile with the unique ID and returns the search results in the form of personal attributes such as picture and name. Additional advantages are detailed later for authentication with devices, retrievals of account on new devices and more. The system provided by the embodiments herein does not require that discoverable members have their respective devices turned on at the time of the search conducted by the first user or connected at the time to the service through internet connection. Thus, the server returns the search results of all members in the vicinity based on their location and proximity to the first user based on stored static locations and the latest dynamic location known and stored on the server.

The foregoing description of the specific embodiments will so fully reveal the general nature of the embodiments herein that others can, by applying current knowledge, readily modify and/or adapt for various applications such specific embodiments without departing from the generic concept, and, therefore, such adaptations and modifications should and are intended to be comprehended within the meaning and range of equivalents of the disclosed embodiments. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

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What is claimed is:

1. A system comprising:

a computing device configured to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members;

a first mobile communications device communicatively linked to said computing device; and

a second mobile communications device communicatively linked to said computing device,

wherein said computing device provides access to stored user profile information about a first user and a second user,

wherein said computing device is configured to store static locations of members and receive information identifying current dynamic locations of all members in said network,

wherein said computing device is configured to calculate and determine a proximity of user locations,

wherein said computing device is configured to send to said first user upon inquiring of other members in said network of said first user, personal attributes of all other members based on proximity calculations to select members that said first user may wish to connect with, and to send to said second mobile communication device an invitation on behalf of said first user for said second user to accept connecting with said first user,

wherein said computing device is configured to communicatively connect said first user and said second user,

wherein said computing device is configured to locate information about said second user from a social network storage file of said second user, and transmit this information to said first mobile communications device,

wherein the first user and the second user are members of a same social network, and the computing device is to disclose non-anonymous social network attributes including a picture, name, and location of the first user and the second user in a vicinity or within a predetermined distance from one another for the purpose of connecting members of the same social network based in part on proximity calculations between connecting members,

wherein said computing device permits discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by said first user, wherein said computing device permits said discoverable members to have their respective devices unconnected to an internet connection service at said time of the search being conducted by said first user, and wherein any of turned off devices and disconnected devices is discoverable by said computer device as said internet connection service is configured to report said any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to said first user.

2. The system of claim 1, wherein said computing device is operable to disclose social network attributes of said first and second users for connecting members.

3. The system of claim 2, wherein said computing device is configured to report to said first user social network attributes of all members of a social network who are in proximity to said first user.

4. The system of claim 1, wherein said computing device is configured to receive from said first user a selection of one

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or more additional users with whom said first user wishes to connect with through a social network.

5. The system of claim 1, wherein said computing device is configured to send to said first user social attributes of one or more of selected additional users.

6. The system of claim 1, wherein said computing device is configured to update profile information to indicate that the first and second users are connected.

7. The system of claim 1, wherein said computing device is configured to store communication between members and synchronize saved communication on a client side application used on devices for communication.

8. The system of claim 1, wherein said computing device is configured to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location.

9. The system of claim 8, wherein updated location indicators are based on user location information reported to said computing device.

10. A method comprising:

using a computing device to communicate with various mobile and terminal devices to manage introduction and connection of members belonging to a same network by sharing personal attributes between members; communicatively linking a first mobile communications device to said computing device; communicatively linking a second mobile communications device to said computing device;

using said computing device to provide access to stored user profile information about a first user and a second user;

using said computing device to store static locations of members and receive information identifying current dynamic locations of all members in said network;

using said computing device to calculate and determine a proximity of user locations;

using said computing device to send to said first user upon inquiring of other members in said network of said first user, personal attributes of all other members based on proximity calculations to select members that said first user may wish to connect with, and to send to said second mobile communication device an invitation on behalf of said first user for said second user to accept connecting with said first user;

using said computing device to communicatively connect said first user and said second user;

using said computing device to locate information about said second user from a social network storage file of said second user, and transmit this information to said first mobile communications device, wherein the first user and the second user are members of a same social

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network, and the computing device is to disclose non-anonymous social network attributes including a picture, name, and location of the first user and the second user in a vicinity or within a predetermined distance from one another for the purpose of connecting members of the same social network based in part on proximity calculations between connecting members; using said computing device to permit discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by said first user; and

using said computing device to permit said discoverable members to have their respective devices unconnected to an internet connection service at said time of the search being conducted by said first user, wherein any of turned off devices and disconnected devices is discoverable by said computer device as said internet connection service is configured to report said any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to said first user.

11. The method of claim 10, further comprising using said computing device to disclose social network attributes of said first and second users for connecting members.

12. The method of claim 11, further comprising using said computing device to report to said first user social network attributes of all members of a social network who are in proximity to said first user.

13. The method of claim 10, further comprising using said computing device to receive from said first user a selection of one or more additional users with whom said first user wishes to connect with through a social network.

14. The method of claim 10, further comprising using said computing device to send to said first user social attributes of one or more of selected additional users.

15. The method of claim 10, further comprising using said computing device to update profile information to indicate that the first and second users are connected.

16. The method of claim 10, further comprising using said computing device to store communication between members and synchronize saved communication on a client side application used on devices for communication.

17. The method of claim 10, further comprising using said computing device to assess a proximity of users to one another based on any of a static location information in a user profile and updated location indicators of a user dynamic location.

18. The method of claim 17, wherein updated location indicators are based on user location information reported to said computing device.

* * * * *



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(12) **United States Patent**
Alharayeri

(10) **Patent No.: US 10,334,397 B2**
(45) **Date of Patent: *Jun. 25, 2019**

(54) **INTERACTION TRACKING AND ORGANIZING SYSTEM**

(71) Applicant: **WIRELESS DISCOVERY LLC**, Los Gatos, CA (US)

(72) Inventor: **Ramzi Alharayeri**, San Jose, CA (US)

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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H04W 4/02 (2018.01)
(Continued)

(52) **U.S. Cl.**
CPC **H04W 4/023** (2013.01); **G06F 16/275** (2019.01); **G06F 16/29** (2019.01);
(Continued)

(58) **Field of Classification Search**
CPC H04W 4/02; H04W 4/12; H04W 8/18; H04W 48/16; H04W 64/00; H04W 84/18;
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

6,178,511 B1 1/2001 Cohen et al.
6,243,816 B1 6/2001 Fang et al.
(Continued)

FOREIGN PATENT DOCUMENTS

DE 10149496 A1 4/2003
EP 1450282 A2 8/2004
WO PCTUS0930756 1/2009

OTHER PUBLICATIONS

Malley, A., "Apple seeks distance-based pairing, auto contact data patents," Webpage: http://appleinsider.com/articles/08/09/27/apple_seeks_distance_based_pairing_auto_contact_data_patents, published on Sep. 27, 2008, 2 pages.

(Continued)

Primary Examiner — Anthony S Addy

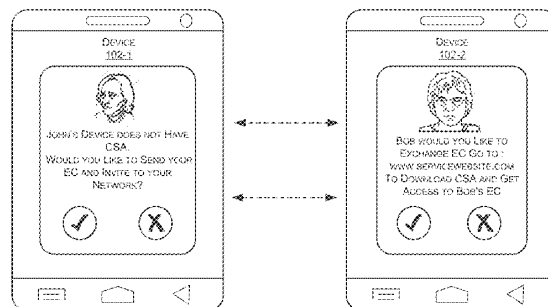
Assistant Examiner — Matthew W Genack

(74) *Attorney, Agent, or Firm* — Rahman LLC

(57) **ABSTRACT**

A server that cross-references a first user's device location with registered members in a spatial proximity of the first user's device and returns the results by disclosing personal user attributes including pictures and names of all members in the spatial proximity of the first user's device. The first user who initiated the inquiry may select from the results returned any discovered user he/she wishes to connect with and send a form of invitation to connect using network available tools such as email, SMS, text or any customized invitation form. The invitation to connect to the inquiring user includes his/her personal attributes including a picture and name. The discovered member who received the invitation may accept, ignore, or decline connecting with the inquiring user. The first user may also receive an invitation from the server to accept, ignore, or decline connecting with the discovered member.

15 Claims, 11 Drawing Sheets



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Related U.S. Application Data

application No. 15/000,960, filed on Jan. 19, 2016, now Pat. No. 9,357,352, which is a continuation-in-part of application No. 14/570,779, filed on Dec. 15, 2014, now Pat. No. 9,264,875, which is a continuation-in-part of application No. 12/351,654, filed on Jan. 9, 2009, now Pat. No. 8,914,024.

- (60) Provisional application No. 61/010,891, filed on Jan. 10, 2008.

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H04L 12/58 (2006.01)
H04L 29/08 (2006.01)
H04W 8/18 (2009.01)
H04W 4/08 (2009.01)
H04W 76/00 (2018.01)
H04W 4/21 (2018.01)
G06F 16/29 (2019.01)
G06F 16/27 (2019.01)
H04L 29/06 (2006.01)
H04W 12/08 (2009.01)
G06F 16/9537 (2019.01)
H04W 84/18 (2009.01)
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H04W 8/00 (2009.01)

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(58) **Field of Classification Search**

CPC H04W 88/06; H04L 29/08657; H04L 29/08108
 USPC .. 455/41.2, 412.2, 414.1, 426.1, 423.3, 434, 455/456.3

See application file for complete search history.

(56)

References Cited

U.S. PATENT DOCUMENTS

7,249,182	B1	7/2007	Heinonen et al.	
7,296,036	B2	11/2007	Celik	
7,310,515	B2	12/2007	Enderlein et al.	
7,346,855	B2	3/2008	Hellyar et al.	
7,353,462	B2	4/2008	Caffarelli	
8,472,874	B2	7/2013	Tang et al.	
8,606,854	B2	12/2013	Serlet	
2004/0009750	A1	1/2004	Beros et al.	
2004/0113807	A1	6/2004	Amram et al.	
2005/0026594	A1	2/2005	Miller et al.	
2005/0053206	A1 *	3/2005	Chingon	H04M 1/573 379/88.19
2005/0076124	A1	4/2005	Enderlein et al.	
2005/0193093	A1	9/2005	Mathew et al.	
2005/0281237	A1	12/2005	Heinonen et al.	
2006/0062356	A1	3/2006	Vendrow et al.	
2006/0063548	A1	3/2006	Kim	
2006/0161599	A1	7/2006	Rosen	
2006/0234631	A1	10/2006	Dieguez	
2006/0281447	A1 *	12/2006	Lewis	H04M 3/42042 455/418
2007/0021111	A1	1/2007	Celik	
2007/0167136	A1	7/2007	Groth	
2007/0168425	A1	7/2007	Morotomi	
2007/0229350	A1 *	10/2007	Scalisi	G06F 21/35 342/350
2007/0242814	A1	10/2007	Gober	
2007/0260751	A1	11/2007	Meesseman	
2008/0051033	A1	2/2008	Hymes	
2008/0108308	A1	5/2008	Ullah	
2008/0140640	A1	6/2008	Raff	
2008/0270425	A1 *	10/2008	Cotgreave	G06F 17/30247
2009/0209202	A1 *	8/2009	Martini	H04W 12/02 455/41.2

OTHER PUBLICATIONS

Dating DNA tutorial video, iPhone App, <http://www.datingdna.com:80/public/help/tutorials/tutorial9.html>, 3 minutes, 57 seconds video, Dating DNA, LLC, Dec. 16, 2008, 1 page print out of webpage.

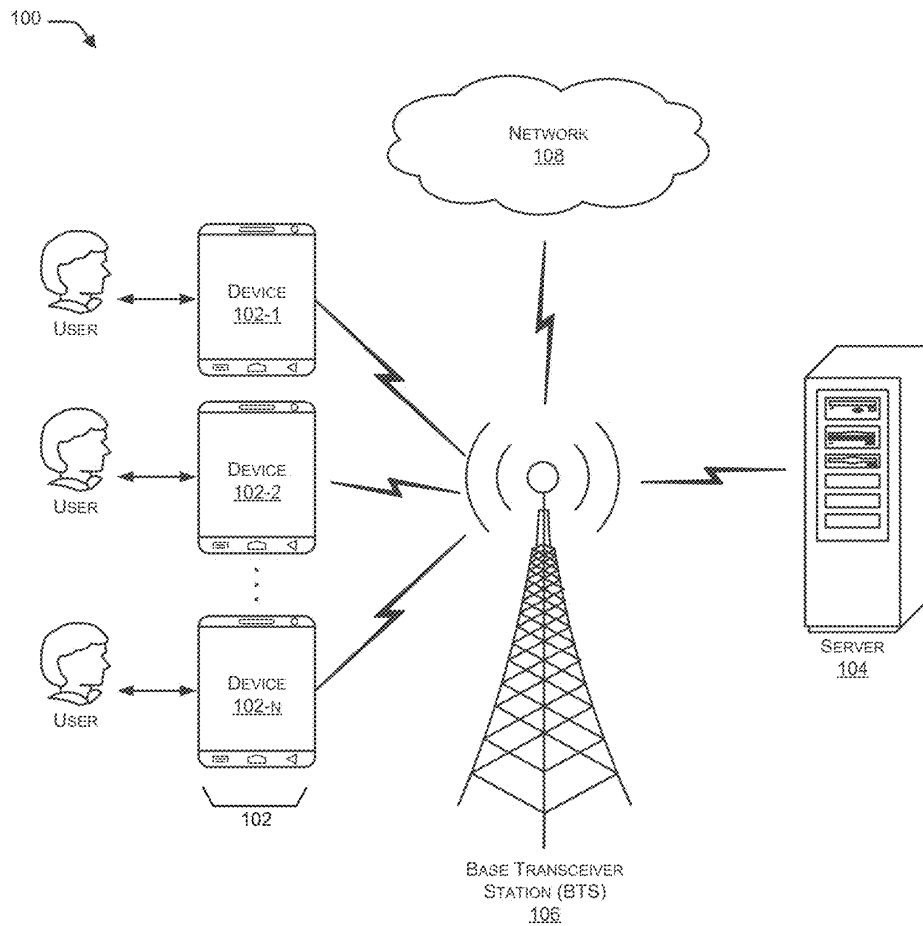
* cited by examiner

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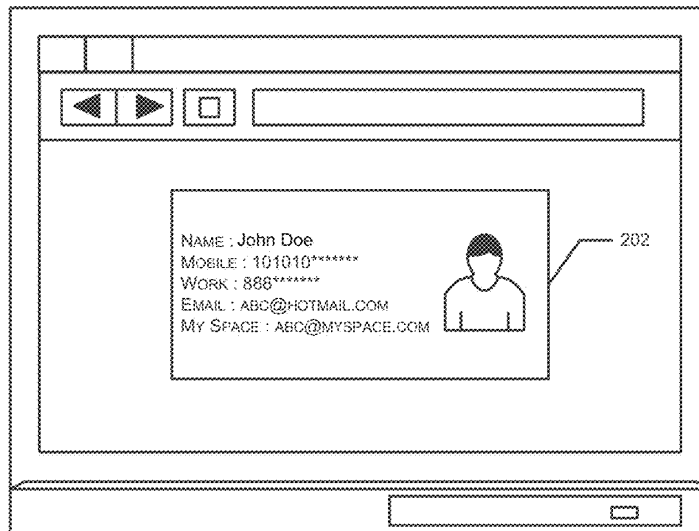


FIG. 2A

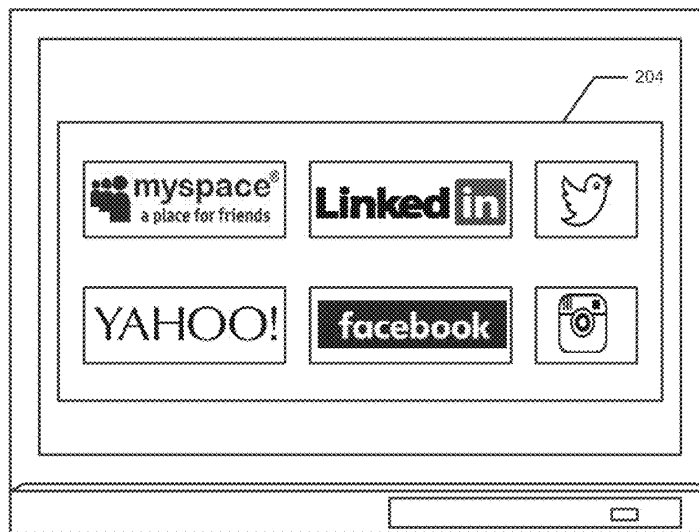


FIG. 2B

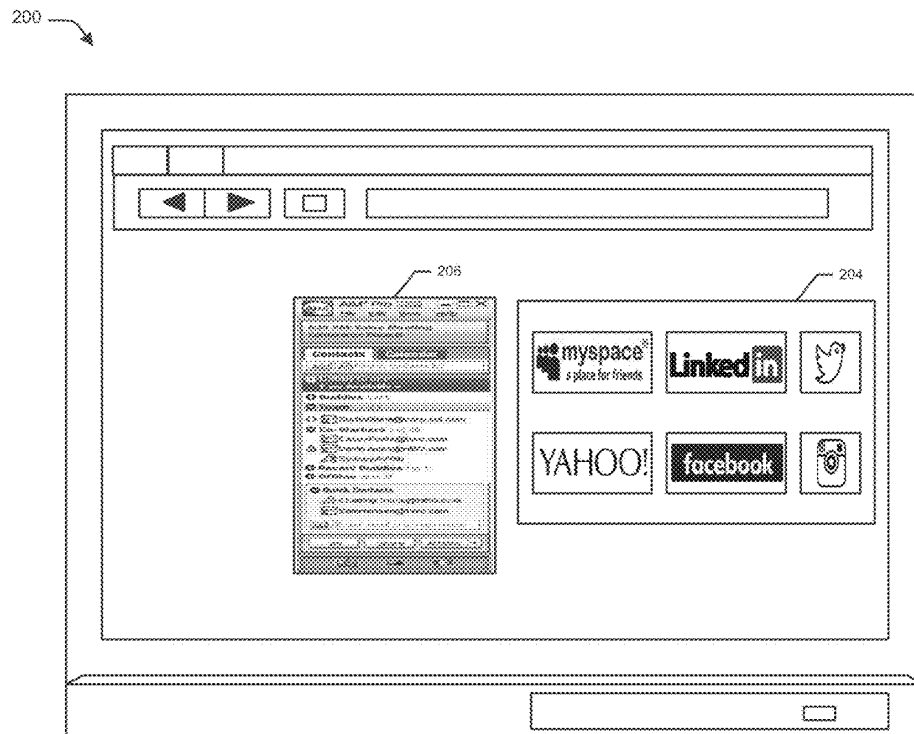
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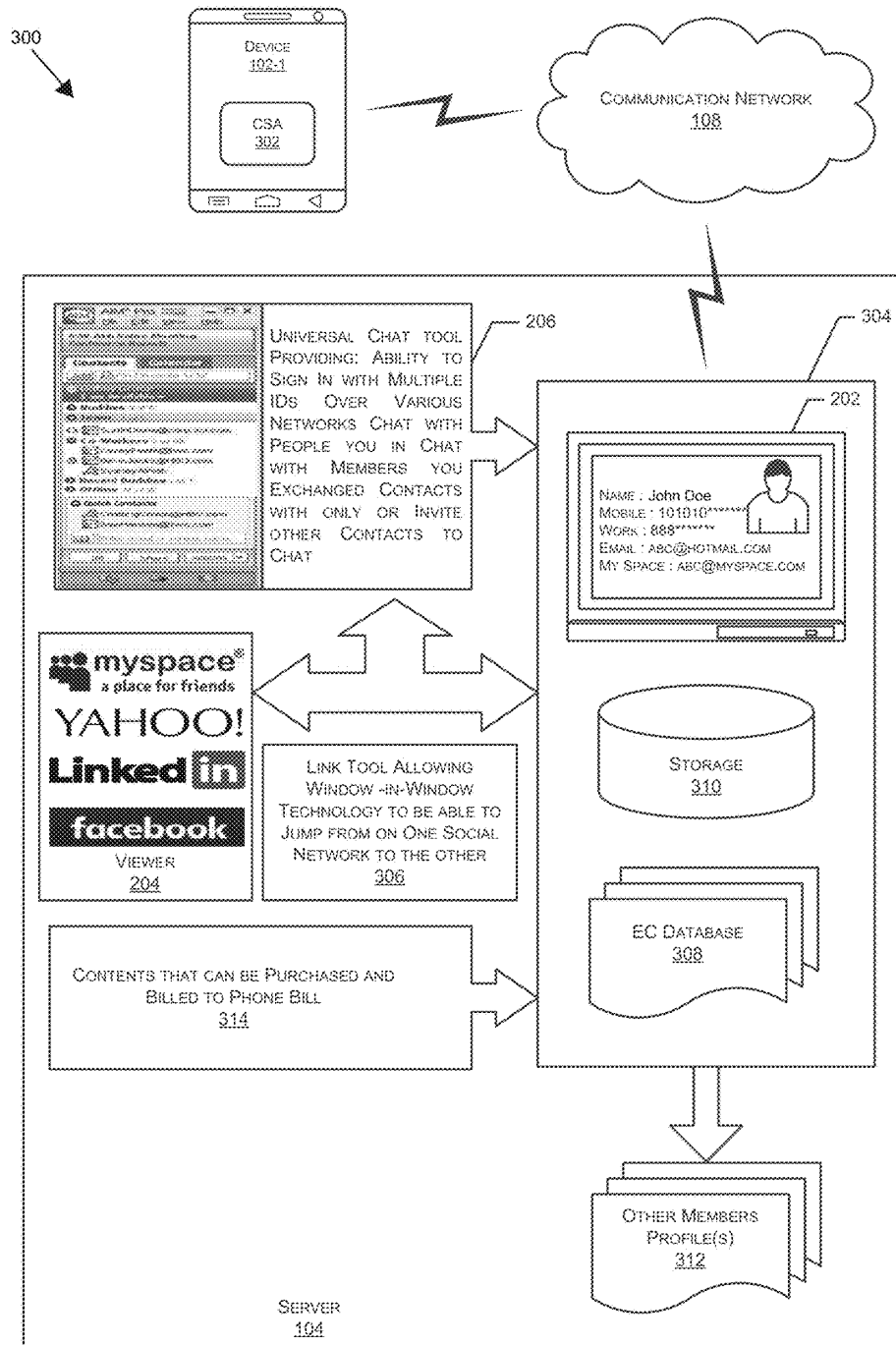


FIG. 3

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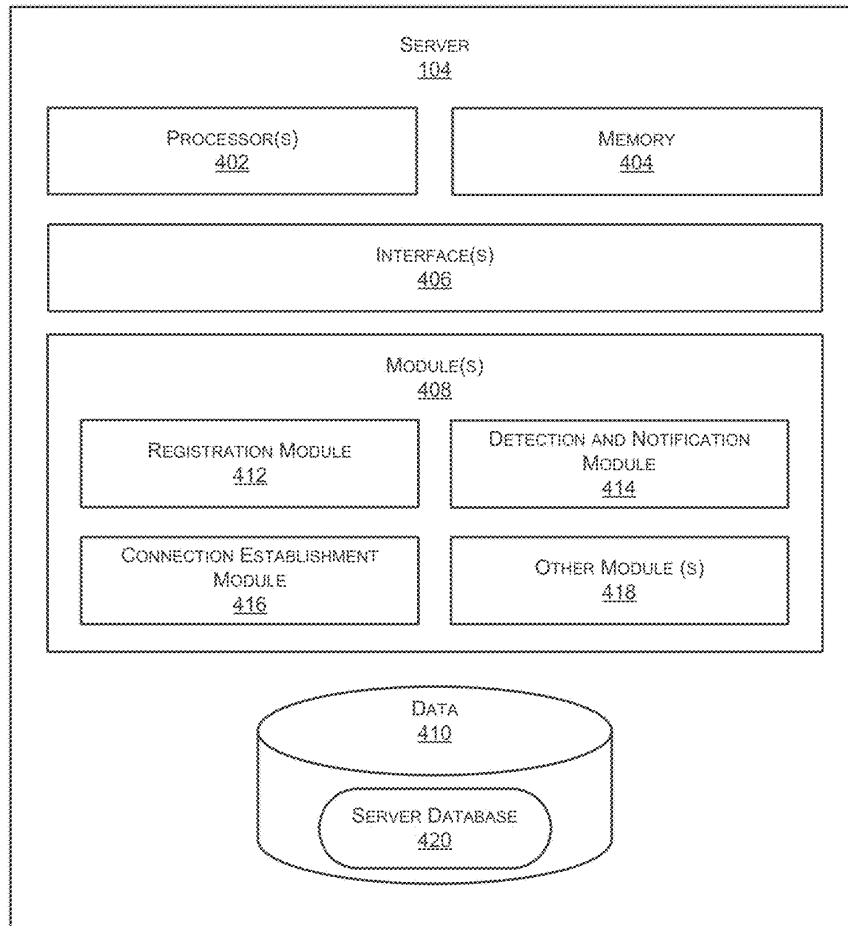


FIG. 4

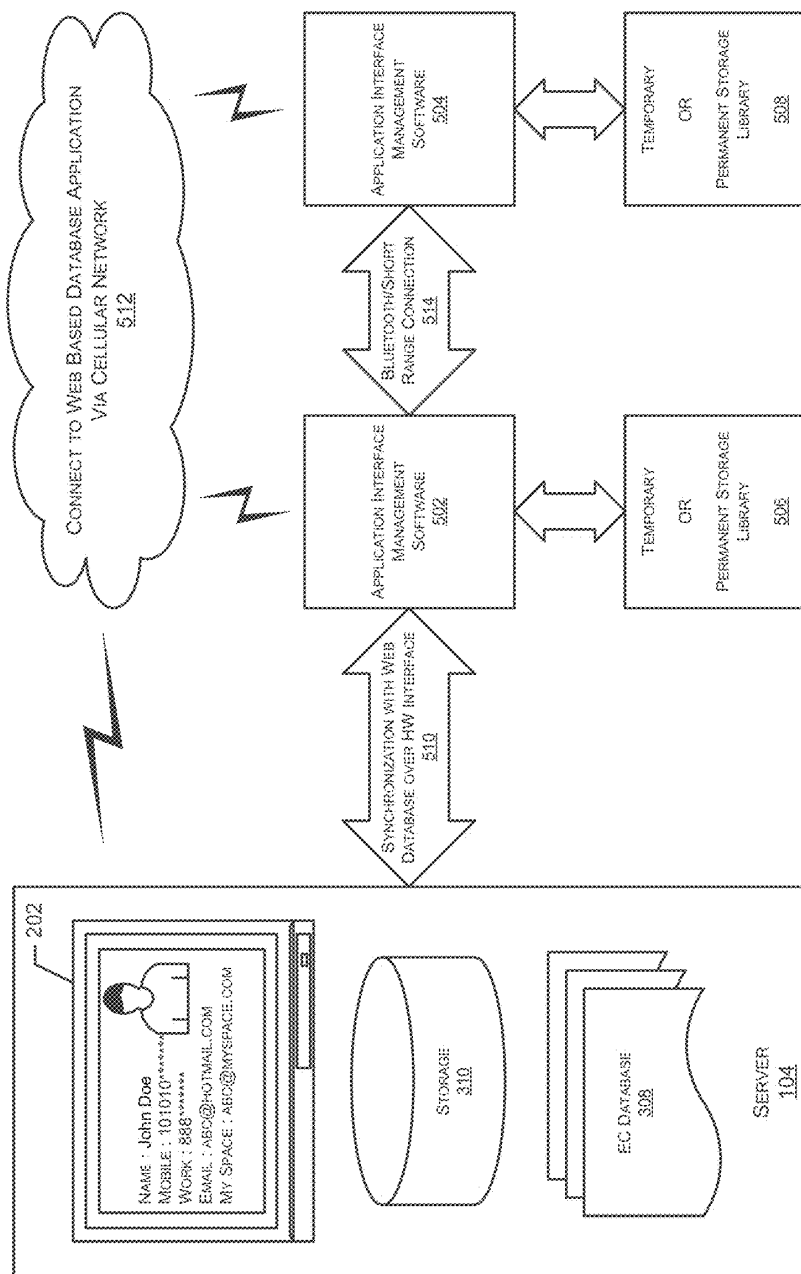


FIG. 5

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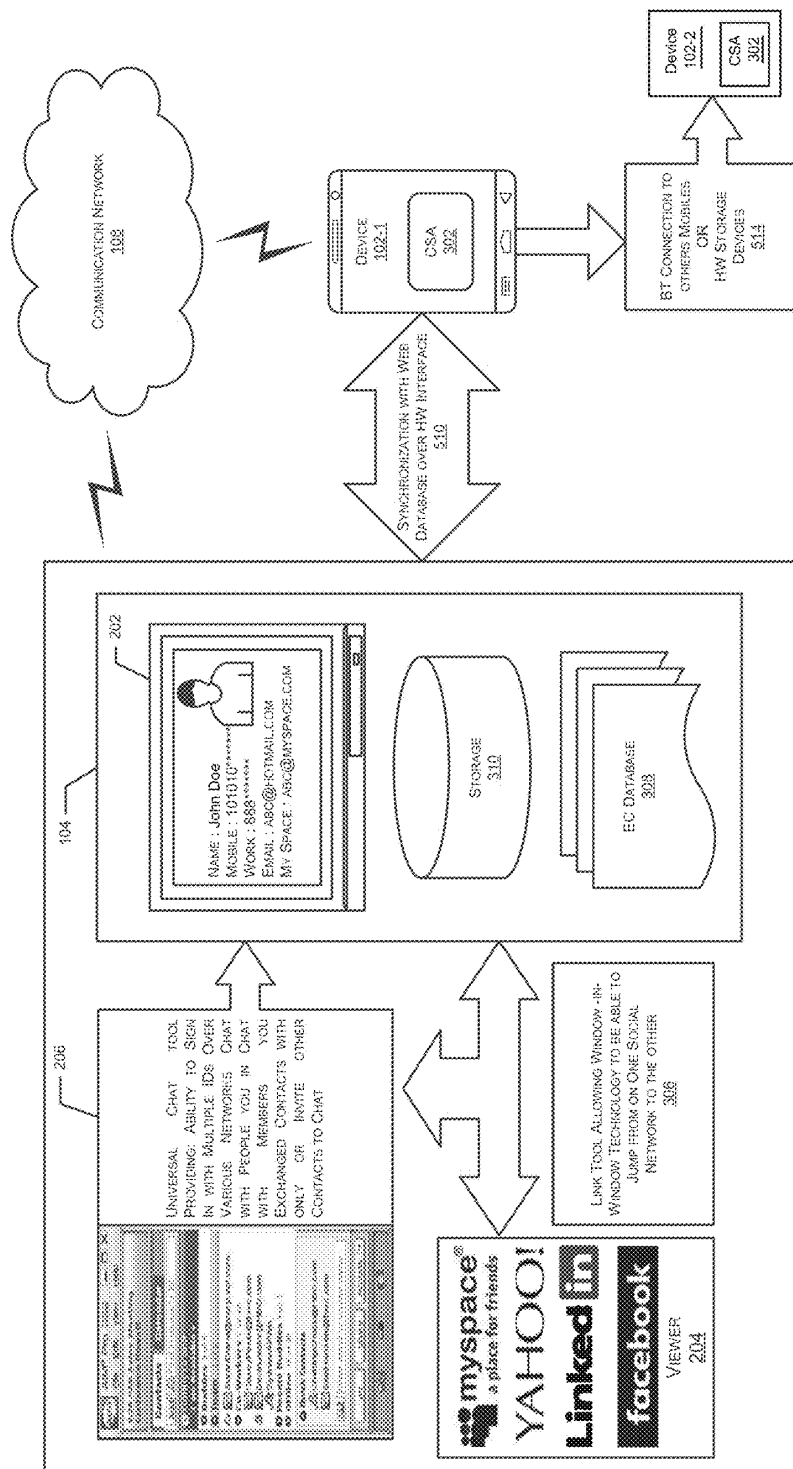


FIG. 6

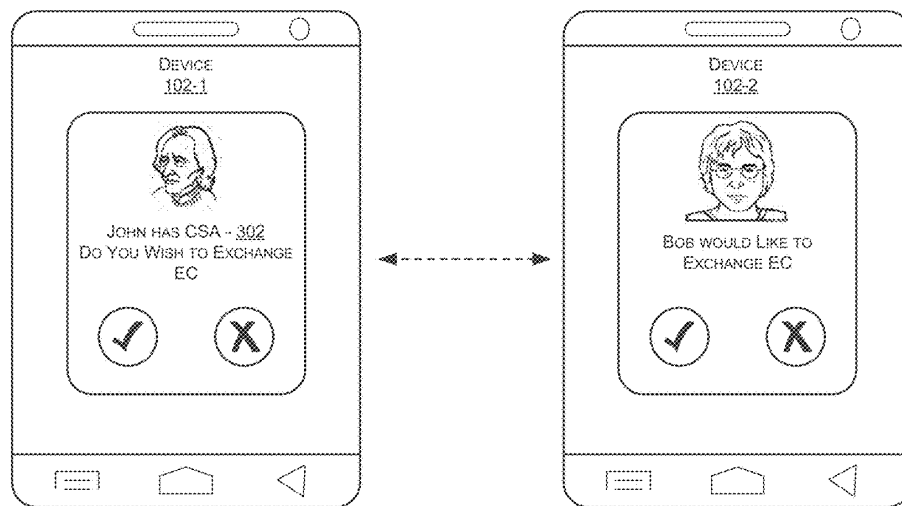


FIG. 7

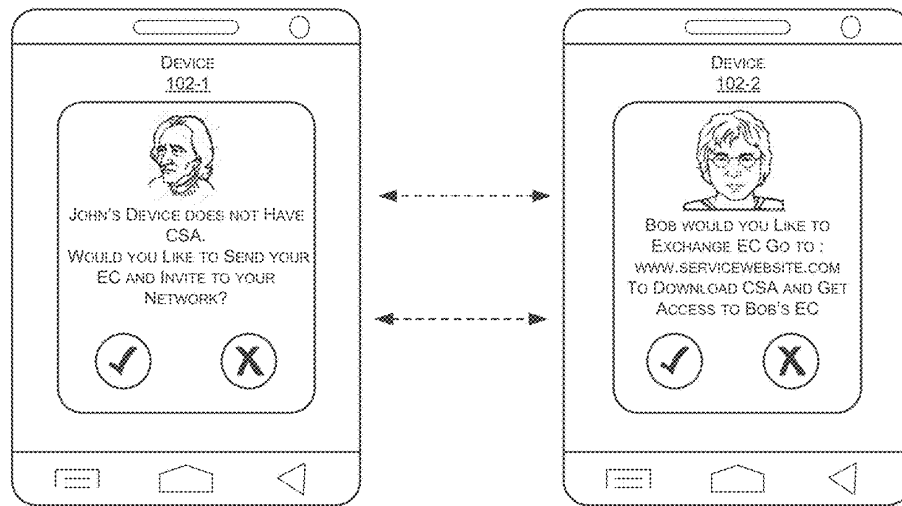


FIG. 8

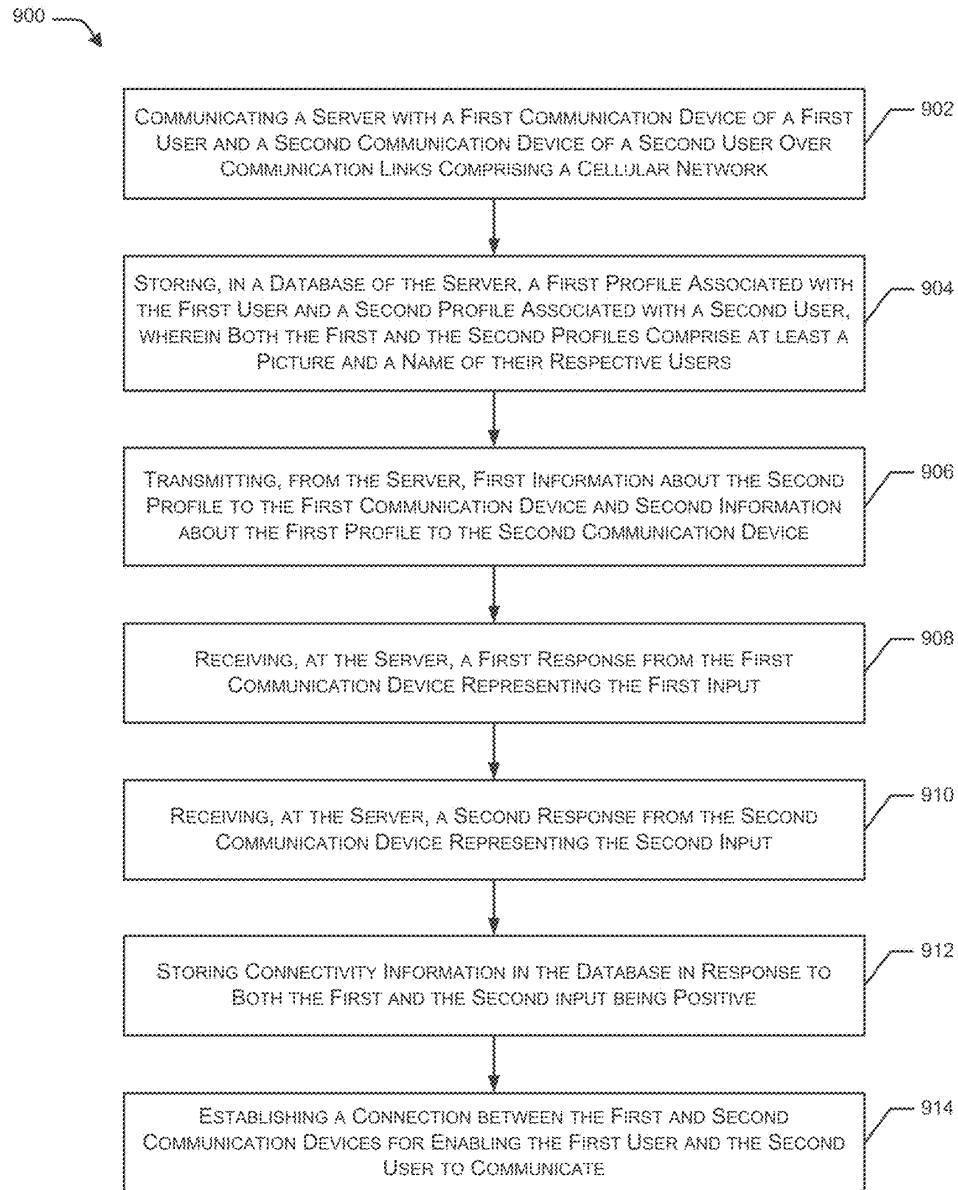


FIG. 9

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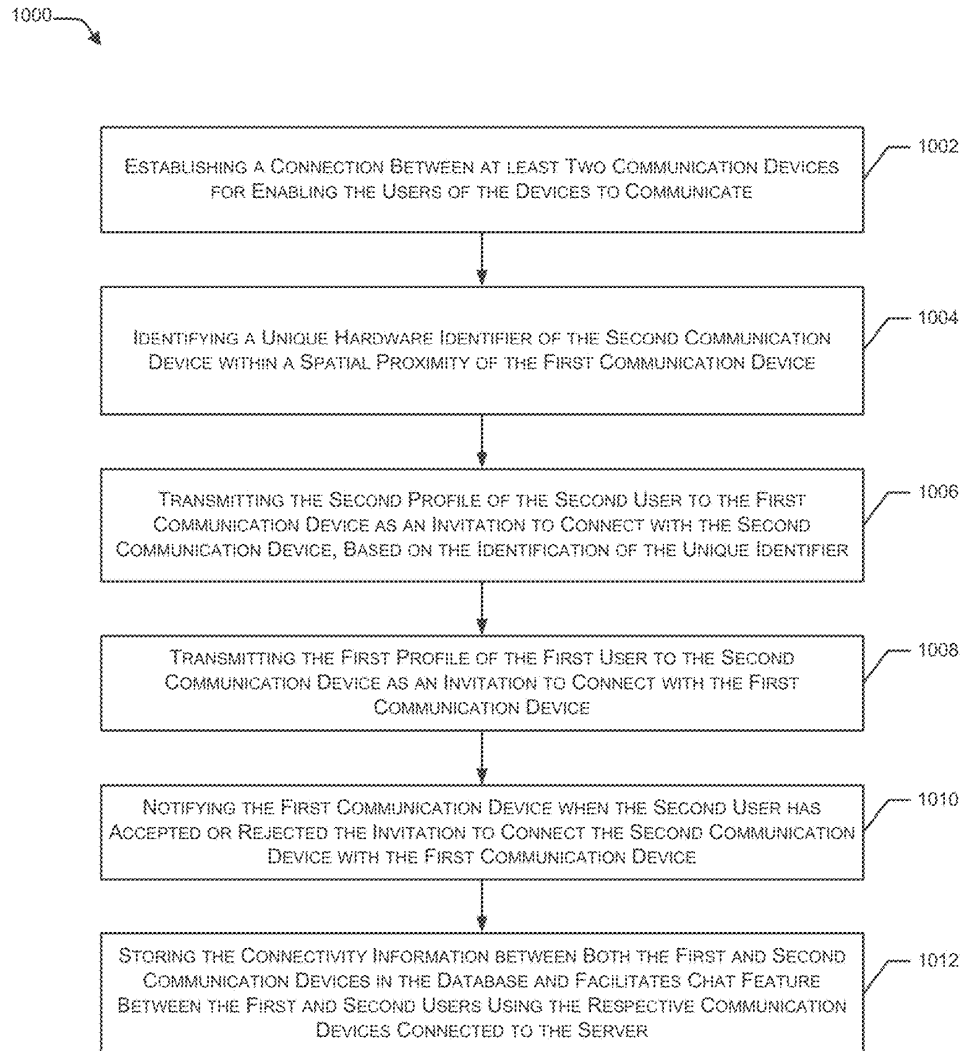


FIG. 10

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**INTERACTION TRACKING AND
ORGANIZING SYSTEM****CROSS-REFERENCE TO RELATED
APPLICATIONS**

This application is a continuation-in-part of U.S. application Ser. No. 15/136,842, filed on Apr. 22, 2016, which is a continuation of U.S. application Ser. No. 15/000,960, filed on Jan. 19, 2016, now U.S. Pat. No. 9,357,352, issued on May 31, 2016, which is a continuation-in-part of U.S. application Ser. No. 14/570,779, filed on Dec. 15, 2014, now U.S. Pat. No. 9,264,875, issued on Feb. 16, 2016, which is a continuation-in-part of U.S. application Ser. No. 12/351,654, filed on Jan. 9, 2009, now U.S. Pat. No. 8,914,024, issued on Dec. 16, 2014, which claims the benefit to U.S. Provisional Application No. 61/010,891 filed on Jan. 10, 2008, the complete disclosures of which, in their entireties, are herein incorporated by reference.

BACKGROUND**Technical Field**

The embodiments herein generally relate to an interaction tracking and organizing system and, in particular, to the establishment of social connections and exchange of electronic coordinates card (also known as contact information card) via the short-range wireless communications.

Description of the Related Art

The usage or access of the social networks on the communication devices has increased tremendously. With such increase in the use of communication devices for accessing social networks, the users of the communication devices are feeling a need of exchanging contact information, including pictures, social network profiles, emails, and phone numbers, for enhancing social interaction.

SUMMARY

In view of the foregoing, an embodiment herein provides a server configured to communicate with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network; store in a database a first profile associated with the first user and a second profile associated with a second user, both the first and the second profile comprising at least a picture and a name of their respective users; automatically determine based on wireless communication that the first communication device and the second communication device are coincidentally located within a spatial proximity to one another; responsive at least to the first communication device and the second communication device coincidentally located in a spatial proximity, send to the first communication device a first information about the second profile and send to the second communication device a second information about the first profile, wherein the first communication device displays on a first screen a first invitation comprising at least a picture and name from the second profile and the second communication device displays on a second screen a second invitation comprising at least picture and name from the first profile, wherein the first communication device is configured to receive a first input from the first user if he is willing to accept the first invitation and the second communication device is configured to receive a second input from the second user if he is willing to accept the second invitation; receive a first response from the first communication device representing the first input;

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receive a second response from the second communication device representing the second input; and responsive to both the first and the second input being positive, store information in the database that the first and the second users are now contacts of each other, and if such information is stored in the database, enable the first user and the second user to communicate using the first and the second communication devices.

The server may be configured to provide to communication device associated with users who are contacts with the first user information about the first user beyond information in the first invitation. The server may communicate with a networking device, and wherein the networking device is to provide social networking services that operates independently of the server. The server may receive profile related information from the networking device. The server may connect with a contact exchanging application executing on the first and second communication devices to execute services and features available with the server. The contact exchanging application may store updated contact information and profiles of user contacts including pictures. The server may utilize the contact exchanging application of the first communication device to discover the second communication device present within the spatial proximity thereof, and to present a picture and name of the second user associated with the second communication device on a user interface of the first communication device before the first user deciding to send an invite to connect. The contact exchanging application may present the second user with an option to accept or reject the invitation sent by the first user by sending to the server the acceptance or rejection response of the second user, and allowing the server to communicate the acceptance or rejection response to the first user.

Another embodiment provides a method comprising communicating a server with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network; storing, in the database, a first profile associated with the first user and a second profile associated with a second user, wherein both the first and the second profiles comprise at least a picture and a name of their respective users; automatically determine based on wireless communication that the first communication device and the second communication device are coincidentally located within a spatial proximity to one another; responsive at least to the first communication device and the second communication device coincidentally located within a spatial proximity, transmitting, from the server, a first information about the second profile to the first communication device and a second information about the first profile to the second communication device, wherein the first communication device displays on a first screen a first invitation comprising at least picture and name from the second profile and the second communication device displays on a second screen a second invitation comprising at least picture and name from the first profile, and wherein the first communication device is configured to receive a first input from the first user if the first user is willing to accept the first invitation, and the second communication device is configured to receive a second input from the second user if the second user is willing to accept the second invitation; receiving, at the server, a first response from the first communication device representing the first input; receiving, at the server, a second response from the second communication device representing the second input; responsive to both the first and the second input being positive, storing connectivity information in the database, wherein the connectivity information represents

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that the first and second users are enabled to communicate using the first and second communication devices; and establishing a connection between the first and second communication devices for enabling the first user and the second user to communicate.

The method may further comprise providing the first and second communication devices with the profile related information beyond the first and second user information comprised in the first and second invitations. The method may further comprise receiving profile related information from a networking device. The method may further comprise receiving profile related information from a networking device in communication with the server. The method may further comprise connecting the server with a contact exchanging application executing on the first and second communication devices to execute services and features available with the server on the first and second communication devices. The method may further comprise discovering, using the contact exchanging application of the first communication device, the second communication device present within the spatial proximity of one another, and presenting a picture and name of the second communication device on user interface of the first communication device before the first user deciding to send an invite to connect. The method may further comprise presenting, by the contact exchanging application, an option to the second user to accept or reject the invitation sent by the first user, sending to the server the acceptance or rejection response of the second user, and allowing the server to communicate the acceptance or rejection response to the first user.

Another embodiment provides a server configured to communicate with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network, wherein the server comprises a processor configured to store in a data storage device a first profile associated with the first user and a second profile associated with a second user, both the first and the second profile comprises at least a picture and a name of their respective users, and able to associate each member profile with unique hardware identification associated with the member device; identify a unique ID of a second member in the vicinity and spatial proximity of the first member and provide the first member with the profile of the second member comprising a picture and name to facilitate invitation and connection between both members; send the second member the profile of the first member including picture and name upon first member initiating an invite to the second member to connect over the service; inform the first member if the second member has accepted or rejected the invite to connect initiated by the first member; and once the second member accepts the invite of the first member, store the connectivity between both members in data base and facilitates chat feature between them using respective devices connected to the server.

The server may further comprise a context information retrieval module, which when executed by the one or more processors, provides the first and second communication devices with the profile related information beyond the first and second user information comprised in first and second invitations. The server may communicate with a second server, and wherein the second server is to provide social networking services that operate independently of the server. The server may receive profile related information from the second server. The server may connect with a contact exchanging application executing on the first and second communication devices to execute services and features available with the server. The contact exchanging applica-

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tion may store updated contacts information and profiles of user contacts including pictures. The server may utilize the contact exchanging application of the first communication device to discover the second communication device present within the spatial proximity, and to present a picture and name of the second user associated with the second communication device on user interface of the first communication device before the first user deciding to send an invite to connect. The contact exchanging application may present the second user with an option to accept or reject the invitation sent by the first user by sending to the server the acceptance or rejection response of the second user, and allowing the server to communicate the acceptance or rejection response to the first user.

Another embodiment provides a method for communicating a server with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network, the method comprising storing, in a data storage device of the server, a first profile associated with the first user and a second profile associated with the second user, wherein both the first and second profiles comprise at least a picture and a name of their respective users, and able to associate each user profile with a unique hardware identifier associated with the users' devices; identifying a unique hardware identifier of the second communication device within a spatial proximity of the first communication device; based on the identification of the unique identifier, transmitting the second profile of the second user to the first communication device as an invitation to connect with the second communication device; transmitting the first profile of the first user to the second communication device as an invitation to connect with the first communication device; notifying the first communication device when the second user has accepted or rejected the invitation to connect the second communication device with the first communication device; and in response to the acceptance of the invitation by the second user, storing the connectivity information between both the first and second communication devices in the data storage device and facilitates chat feature between the first and second users using the respective communication devices connected to the server.

The method may further comprise providing the first and second communication devices with the profile related information beyond the first and second user information comprised in the first and second invitations. The method may further comprise receiving profile related information from a networking server. The method may further comprise receiving profile related information from a networking server present in communication with the server. The method may further comprise connecting with a contact exchanging application executing on the first and second communication devices to execute services and features available with the server on the first and second communication devices. The method may further comprise discovering, using the contact exchanging application of the first communication device, the second communication device present within the spatial proximity, and presenting picture and name of the second communication device on user interface of the first communication device before the first user deciding to send an invite to connect. The method may further comprise presenting, by the contact exchanging application, an option to the second user to accept or reject the invitation sent by the first user, sending to the server the acceptance or rejection response of the second user, and letting the server communicate the acceptance or rejection response to the first user.

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BRIEF DESCRIPTION OF THE DRAWINGS

The embodiments herein will be better understood from the following detailed description with reference to the drawings, in which:

FIG. 1 illustrates an exemplary architecture implementing a server in accordance with the embodiments herein;

FIG. 2A illustrates a sample EC file in accordance with the embodiments herein;

FIG. 2B illustrates a window-in-window viewer in accordance with the embodiments herein;

FIG. 2C illustrates an exemplary representation of a web-based portal of the server in accordance with the embodiments herein;

FIG. 3 illustrates an exemplary architecture implementing the server in accordance with the embodiments herein;

FIG. 4 illustrates various components of a server in accordance with the embodiments herein;

FIG. 5 illustrates an exemplary architecture implementing the server in accordance with the embodiments herein;

FIG. 6 illustrates another exemplary architecture implementing the server in accordance with the embodiments herein;

FIG. 7 illustrates an example of the notification of an invitation to connect, in accordance with the embodiments herein;

FIG. 8 illustrates another example of the notification of an invitation to connect, in accordance with the embodiments herein;

FIG. 9 an exemplary flow diagram illustrating a first method, in accordance with the embodiments herein; and

FIG. 10 illustrates an exemplary flow diagram illustrating a second method, in accordance with the embodiments herein.

DETAILED DESCRIPTION

The embodiments herein and the various features and advantageous details thereof are explained more fully with reference to the non-limiting embodiments that are illustrated in the accompanying drawings and detailed in the following description. Descriptions of well-known components and processing techniques are omitted so as to not unnecessarily obscure the embodiments herein. The examples used herein are intended merely to facilitate an understanding of ways in which the embodiments herein may be practiced and to further enable those skilled in the art to practice the embodiments herein. Accordingly, the examples should not be construed as limiting the scope of the embodiments herein. As used herein, the terms “a” or “an” are used, as is common in patent documents, include one or more than one. In this document, the term “or” is used to refer to a “nonexclusive or” unless otherwise indicated.

The embodiments herein provide a system and a method to ascertain authenticity of the data shared over a network service. The embodiments herein provide a system and method that allows disseminating flow of data unit over an un-trusted network. The embodiments herein a system and a method to ascertain authenticity of the data based on the reputation or identity information of the owner of the data in addition to the content of the data shared over a network service. The embodiments herein provide a system and a method to disseminate the flow of data over an un-trusted network. Referring now to the drawings, and more particularly to FIGS. 1 through 10, where similar reference characters denote corresponding features consistently throughout the figures, there are shown exemplary embodiments.

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The embodiments herein provide a system and a method to establish a connection between at least two communication devices to share electronic coordinate (EC) files over short-range wireless communication. The embodiments herein provide a system and a method to allow user's communication device to regularly update a local EC file with an updated online EC file. The embodiments herein provide a system and a method to ascertain the presence of communication devices within a range of the short-range wireless communication using a common application executing on the communication devices.

The embodiments herein provide a system and a method for providing a secure and authenticated operation of sharing or exchanging EC files between communication devices. The embodiments herein provide a system and a method of maintaining and storing user's contact files in a database of on an online platform. The embodiments herein provide a system and a method of facilitating a chat feature between users having profiles or accounts over different networking platforms.

The embodiments herein may utilize communication devices, a system (server) and a method implemented in accordance with the descriptions herein. The communication devices generally include a short-range wireless transceiver, such as Bluetooth® or near field communication (NFC) transceiver, targeted towards peer-to-peer wireless communication. The communication devices may further include at least one supplementary wireless communication adapter, which preferably supports longer range and/or higher data rates than the short-range transceiver. Non-limiting examples of the supplementary adapters include a GSM (Global System for Mobile Communications) transceiver and a WLAN (Wireless LAN, wireless local area network) transceiver. The supplementary adapter may be such that it is configured to co-operate with a predetermined communications network (infrastructure) such as the adapters listed above. The communications network may further connect to other networks and provide versatile switching means for establishing circuit switched and/or packet switched connections between the communication devices.

In an aspect, when a first communication device may be brought, by a user thereof, into the spatial proximity; i.e., within the range of the short-range wireless transceiver of remote or second communication device, the communication device may receive notification (including at least picture and name of user of the communication device) from a server herein about profile associated with user of the second communication device. Similar notifications about a profile associated with the user of the first mobile device may be received on the second communication device from the server. In an example, the notification about the profile may include at a picture and a name of respective user. Also, the notification may ask for confirmation (acceptance/rejection) from respective users that whether they want to exchange electronic coordinate (EC) file (also referred to herein as a contact information card) via the short-range wireless communication link. The EC file may include information about the users beyond the information shared along with notification. For example, the EC file may include, but is not limited to, a picture or graphic, phone number, fax number, social network profile identification number, and other encrypted or non-encrypted information. Upon receiving an affirmative response from both the users, a connection may be established by the server between the first and second communication devices of both the users, for exchanging the EC files. In an aspect, the first and second

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communication devices may exchange the EC files simultaneously or in a serial sequence.

In an aspect, transmission and reception of various data, such as notifications and/or EC files, relative to communication devices and/or system(s)/server(s) connecting the communication devices, may take place directly or via a common client-side application executing on both the communication devices. In an example, in case the transmission and reception of various data takes place using the common client-side application or app, the communication devices may search for another communication devices having same and common client-side application for implementation of the subject matter described in the embodiments herein.

In an aspect, the first communication device may wirelessly send and address notifications to/from remote parties, such as a server arrangement according to the embodiments herein, for storage and further distribution of the exchanged or received EC files from the remote/second communication device, directly to and through the common client-side application installed on the first communication device.

Accordingly, in an embodiment, a server of establishing a communication link for exchanging profile related information between communication devices is provided. In an example, the server may be implemented as, or within, a server for implementing the various functionalities of the embodiments herein. The server may include a non-transitory storage device having embodied therein one or more routines, and one or more processors coupled to the non-transitory storage device and operable to execute the one or more routines. In an aspect, the one or more routines may include a registration module, a detection and notification module, and a communication establishment module. The registration module may communicate with a first communication device of a first user and a second communication device of a second user over communication links including a cellular network. Upon communicating with the first and second communication devices, the registration module may store, in its database, a first profile associated with the first user and a second profile associated with a second user, where both the first and the second profiles may include at least a picture and a name of their respective users. In another example, the first and the second profiles may be stored in a common app (client-side application) executing on the first and second communication devices. In an aspect, when both the first and second communication devices are implementing the common client-side application and are connected through the same server, the first and second communication devices may be considered as users or members of the server connecting them.

Following the storage of the first and second profiles by the registration module, the detection and notification module may continuously track the locations of the first communication device and the second communication device so as to detect whether the first communication device and the second communication device are coincidentally located within a spatial proximity. In an example, the range of spatial proximity may be defined based on the range of a standard short-range wireless communications link. In an example, the detection and notification module may locate the communication devices using the common app (client-side application) installed in accordance with the embodiments herein on both the communication devices.

In response to at least the first communication device and the second communication device coincidentally located within the spatial proximity, the detection and notification module may transmit a first information about the second profile to the first communication device and a second

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information about the first profile to the second communication device. Upon transmission or reception of the information about the profiles, the first communication device may display a first invitation including at least the picture and name of the second profile, and the second communication device may display a second invitation including at least the picture and name of the first profile. Also, in an example, the first communication device may be configured to receive a first input from the first user if the first user is willing to accept the first invitation and the second communication device may be configured to receive a second input from the second user if the second user is willing to accept the second invitation.

Upon receipt of the invitations, the connection establishment module may receive a first response from the first communication device representing the first input, and a second response from the second communication device representing the second input. In an example, the common app (client-side application) running on both the first and second communication devices may provide the first and second users with an option to accept or reject the invitation sent by the other respective user. In case both the first and the second inputs are positive towards acceptance of invitation, the connection establishment module may store connectivity information in the database that the first and the second users are now contacts of each other, followed by establishing a communication between the first and second communication devices.

In an aspect, once the communication is established between the first and second communication devices, the first and second users may access or receive user information beyond information received in the first and second invitations. The user information may include, but is not limited to, a picture or graphic, phone number, fax number, social network profile identification number, and other encrypted or non-encrypted information. In an example, the information may collectively referred to as electronic coordinates (EC) of user and accessed/received in the form of a digital file called as EC file.

Based on the information received from the first and second communication devices, the server may communicate with a networking server. The networking server may be operating independently of the server. Further, the networking server may be a server providing social networking services such as Facebook®, Twitter®, Instagram®, MySpace®, LinkedIn®, and the like.

Once the server communicates with the networking server, the server may be able to use contact information, or profile related information, of first or second users to update the user information received from the first or second communication devices.

In an aspect, the server may establish a connection or communication with the contact exchanging applications executing on the first and second communication devices to execute its services and features on the first and second communication devices.

In an aspect, the contact exchanging applications may be used to store updated contacts information and profiles of user contacts including pictures on a respective communication device for facilitating instant access to user.

The embodiments herein further provide a method comprising communicating a server with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network; storing, in a database of the server, a first profile associated with the first user and a second profile associated with a second user, where both the first and the

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second profiles comprise at least a picture and a name of their respective users; responsive at least to the first communication device and the second communication device coincidentally located within a spatial proximity, transmitting a first information about the second profile to the first communication device and a second information about the first profile to the second communication device, where the first communication device displays on a first screen a first invitation including at least picture and name from the second profile and the second communication device displays on a second screen a second invitation comprising at least picture and name from the first profile, and the first communication device may be configured to receive a first input from the first user if the first user is willing to accept the first invitation, and the second communication device is configured to receive a second input from the second user if the second user is willing to accept the second invitation; receiving a first response from the first communication device representing the first input; receiving a second response from the second communication device representing the second input; responsive to both the first and the second input being positive, storing connectivity information in the database, wherein the connectivity information represents that the first and second users are enabled to communicate using the first and second communication devices; and establishing a connection between the first and second communication devices for enabling the first user and the second user to communicate.

The embodiments herein further provide a server for communicating with a first communication device of a first user and a second communication device of a second user over communication links including a cellular network. In an aspect, the server may include a non-transitory storage device having embodied therein one or more routines, and one or more processors coupled to the non-transitory storage device and operable to execute the one or more routines. The one or more routines may include a registration module, a detection and notification module, and a connection establishment module. The registration module may store, in a database, a first profile associated with the first user and a second profile associated with the second user. In an example, both the first and second profiles comprise at least a picture and a name of their respective users, and are able to associate each user profile with a unique hardware identifier associated with the users' devices. For example, each user profile may be associated with device's identification number. Once the first and second profiles are stored, the detection and notification module may identify a unique hardware identifier of the second communication device within a spatial proximity of the first communication device. In an example, the range of the spatial proximity of the first communication device may be defined using the range of the short-range wireless communication.

Based on the identification of the unique identifier, the detection and notification module may transmit the second profile of the second user to the first communication device as an invitation to connect with the second communication device, and the first profile of the first user to the second communication device as an invitation to connect with the first communication device. Thereafter, the detection and notification module notifies the first communication device when the second user has accepted or rejected the invitation to connect the second communication device with the first communication device. Following the receipt of the acceptance of the notification, the connection establishment module may store the connectivity information between both the first and second communication devices in the database and

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facilitate chat feature between the first and second users using the respective communication devices connected to the server.

Based on the information received from the first and second communication devices, the server may communicate with a networking server. The networking server may be operating independently of the server. Further, the networking server may be a server providing social networking services such as Facebook®, Twitter®, Instagram®, MySpace®, LinkedIn®, and the like.

Once the server communicates with the networking server, the server may be able to use contact information, or profile related information, of first or second users to update the user information received from the first or second communication devices.

In an aspect, the server may establish a connection or communication with the contact exchanging applications executing on the first and second communication devices to execute its services and features on the first and second communication devices.

In an aspect, the contact exchanging applications may be used to store updated contacts information and profiles of user contacts including pictures on a respective communication device for facilitating instant access to user.

The embodiments herein further include a method for communicating a server with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network. The method may include storing, in a database of the server, a first profile associated with the first user and a second profile associated with the second user, where both the first and second profiles comprise at least a picture and a name of their respective users, and able to associate each user profile with a unique hardware identifier associated with the users' devices; identifying a unique hardware identifier of the second communication device within a spatial proximity of the first communication device; based on the identification of the unique identifier, transmitting the second profile of the second user to the first communication device as an invitation to connect with the second communication device; transmitting the first profile of the first user to the second communication device as an invitation to connect with the first communication device; notifying the first communication device when the second user has accepted or rejected the invitation to connect the second communication device with the first communication device; and in response to the acceptance of the invitation by the second user, storing the connectivity information between both the first and second communication devices in the database and facilitates chat feature between the first and second users using the respective communication devices connected to the server.

In operation, when the first user associated with the first communication device and the second user associated with the second communication device wish to create an account with a server herein, the server communicates with the first and second devices over communication links including cellular network. Once the communication is established, the server may ask the users of the first and second device to install an app; e.g., a client-side application, on their respective devices. Upon installation of the client-side application, the users may log in and create a new user profile by selecting which information he/she wishes to exchange as part of electronic coordinates (EC). Also, the users may select information about the profile which they want to transmit along with an invitation to connect. For example,

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the information about the user profile may include at least a picture and a name of the user.

Once the user profiles are created, these user profiles are stored on in a web database of the server. While storing the user profiles, the users may also store their contacts or EC files stored on the devices or other networking servers in the web database. For example, the users may synchronize their device contacts, or EC files, with the web database to update the contacts on the web database. In an example, the users may save their user IDs and passwords of other networking servers in encrypted form on the server, so as to allow the server to import contacts or ECs from these other networking servers. In one example, the server may periodically synchronize the information related to user profile and contacts from the communication devices and the other networking servers, for ensuring that the updated information is stored in the web database of the server. As described herein, the web database may also be interchangeably referred to as Electronic Coordinates (EC) master database.

Once the user profiles and the user contacts are stored and updated, the server may continuously monitor the locations of the devices associated/member with the server. In an example, the server may continuously monitor the locations using the app; e.g., a client-side application, installed on the devices. In the example, the app may search for similar or the same app installed on other communication devices present within a spatial proximity. The range of the spatial proximity may correspond to range of a short-range wireless communication standard of the communication devices.

Once the app that is installed on first communication device determines that the second communication device with same app is within a spatial proximity of the first communication device, the server may transmit information about a user profile associated with the first communication device to the second communication device, and also transmits other information about a user profile associated with the second communication device to the first communication device. In one example, the information about the profile may be transmitted and presented as an invitation to connect with the other communication device. In the example, the invitation may present at least a user picture, a user name, and an option to accept/reject the invitation.

Once both the users accept the invitation to connect, the server may store connectivity information in the web database that from now onwards the users of the first and second communication devices are contacts of each other, and then establish a communication between the app implemented on the first and second communication devices to exchange the EC files or contact information. In one example, the app implemented on the first and second communication devices may be a Bluetooth® app or a web app. In an example, in case of a Bluetooth® app, the first and second communication devices may exchange EC files or contact information over a Bluetooth® communication link. In another example, in the case of a web app, the first and second communication devices may exchange or update EC files or contact information over web based services facilitated via cellular services.

Further, once the EC files or the contact information is exchanged between the first and second communication devices, the server may facilitate a universal chat tool. Such a tool may facilitate the users of the first and second communication devices to communicate with each other using messages with their accounts maintained at different networking servers/portals. Thus, with the servers (systems)

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and methods, users having accounts maintained at disparate networking servers may communicate with each other over the universal chat tool.

Accordingly, the servers (systems) and methods provided by the embodiments herein enable the users to exchange EC files over short-range wireless communication link, allow the users to add the contact information (EC files) from other networking servers/portals to EC master database of the system, allow for the ability to link the online maintained contact information of EC files with a universal chat tool, and allow users to chat across the disparate networking servers/portals.

FIG. 1 illustrates an exemplary architecture 100 for creation, sharing, and exchange of an electronic coordinate (EC) file (e.g., a contact information card) via a short-range wireless communication link in accordance with the embodiments herein. The EC file may include user information having, but is not limited to, a picture or graphic, phone number, fax number, social network profile identification number, and other encrypted or non-encrypted information. Apart from creation, sharing, and exchange of the EC file, the architecture 100 may also facilitate the services including registration with a server, view newly created social card/profile on a server, edit profile including adding multiple pictures, obtain user location dynamically based on standard mobile communication protocols, search for network members in spatial vicinity, access additional features provided by social network such as chat with members, view members who discovered the user, accept or reject invitations to connect, and access any features provided by a social network facilitate by the server.

In an aspect, the architecture 100 may include a plurality of communication devices 102-1, 102-2, . . . , 102-N, hereinafter collectively referred to as communication devices 102 (or simply, devices 102) and individually as communication device 102 (or simply, device 102). Examples of the communication devices 102 may include, but are not limited to, mobile phones, smart phones, personal computers ("PCs"), laptops, and other network-enabled devices which let users to surf the web to access sources of information and entertainment, send e-mails and instant messages.

Further, the communication devices 102 may communicate with each other and a server 104 over a cellular network 108 facilitated by at least one base transceiver station (BTS) 106. In an example, the server 104 may be a networking server, a network server, a web server, or a data server. In an example, the server 104 may facilitate a web-based networking service which allows members or users of that service to interact with their contacts associated or linked to other disparate social networks (e.g., Facebook®, LinkedIn®, Twitter®, etc.), micro-blogs (e.g., Pinterest®, Tumblr®, Instagram®, etc.), blogs, e-commerce sites, and other social networks that support the creation, introduction, sharing, purchase, licensing, renting, and consumption of data.

The cellular network of the BTS 106 may facilitate bi-directional communication links between the communication devices 102 and the server 104 through a communication standard that provides separate facilities for transmission of digital data.

In an aspect, the BTS 106 may establish a communication network 108 between the communication devices 102 and the server 104, and may facilitate communication according to packet-based telecommunications protocol such as 3G, 4G, LTE, or any similar data technology.

In an example, the communication network 108 may be a wireless network, a wired network or a combination thereof.

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The communication network may be implemented as one of the different types of networks, such as intranet, Local Area Network (LAN), Wide Area Network (WAN), the Internet, and the like. The communication network may either be a dedicated network or a shared network. The shared network represents an association of the different types of networks that use a variety of protocols, for example, Hypertext Transfer Protocol (HTTP), Transmission Control Protocol/Internet Protocol (TCP/IP), Wireless Application Protocol (WAP), and the like, to communicate with one another. Further, the communication network may include a variety of network devices, including routers, bridges, servers, communication devices, storage devices, and the like.

When a user of communication device **102-1** wishes to join or become member of the server **104** herein, the user may sign-up or register with a service of the server **104** through website or using the communication device **102-1**. In an example, the user may access the service website by browsing a uniform resource locator (URL) address of the website. Once the user lands on the service website of the server **104**, the user may register with the server **104** by creating a new account by submitting basic information, including name and picture. For ease of registration, the user may optionally sign-up using other existing social network credentials and import pictures from these other existing social network(s) for creation of the new account with the server **104**, if the other existing social network allows transferring and/or access of users' information and personal attributes such as picture(s) and name.

In an aspect, the creation of the user profile may be performed by selectively submitting the profile related information which the user may wish to exchange with other users while establishing communication for the first time. Such selective profile related information may include, but is not limited to, a picture and name of the user. In addition to the selective information, the user information may include, but is not limited to, a picture or graphic, phone number, age, e-communication address, fax number, social network profile identification number, device's identification number, and other encrypted or non-encrypted information.

Additional aspects of the registration process may include creating a social electronic coordinates (EC) card or profile, which is intended to be shared with other members or be discovered by other members of the server **104**. An example of an EC card **202** generated is shown in FIG. 2A, with reference to FIG. 1. In an aspect, the user's or a member's profiles may be available for members present in a spatial proximity to the user's communication device **102-1** to view, via a mobile data connection to internet or direct internet connection from the communication device **102-1** to a local wireless network.

In an embodiment, signing-up or registration through the communication device **102-1** may require the user of that communication device **102-1** to download a CSA (Client-side Application) from either a third-party application provider or request from the service website to send to his/her communication device **102-1** a link allowing the download of the CSA. Once the CSA is downloaded on the communication device **102-1**, the user may provide information by filling out, including uploading graphics or pictures, an on-line profile through a web based interface or interface of the CSA.

Further, the CSA residing on the communication device **102-1** may facilitate the user to communicate directly with the service website of the server **104**, through a provided internet connection, to synchronize/update contacts and to

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manage communication with contacts or potential new contacts, access account information via username/password, or phone ID, send search requests for information about users in the spatial proximity, transmit invitations for accepting/denying exchange requests for exchange of contact information, obtain instances of the server addresses, allow the user to edit his/her own profile, and update photos or information or add additional photos or information, etc. In an example, the CSA may connect to the server **104** through internet connection provided by the communication device **102-1**. In an example, the CSA may obtain a mobile device unique identifier upon completion of the sign-up process from the communication device **102-1** or upon first access from the communication device **102-1**. The obtained unique identifier may then be submitted to the server **104** for associating with user account of the user associated with the communication device **102-1**, so that the unique identifier may be used to authenticate the communication device **102** for providing access to the user.

Further, personal and other user information, including hobbies, business associations, or personal information as examples, may also be added by way of the CSA for storage on the server **104**. In order to take advantage of the functionalities offered by the server **104**, the member of the server's service may have a communication device that provides separate facilities for transmitting digital data. This allows the communication device to act like any other computer over the Internet, including sending and receiving data via the Internet Protocol.

In a further aspect, the service offered by the server **104** may be part of a social network. Accordingly, following the creation or registration of the new account with the server **104**, the server **104** or the CSA may prompt the user to enter the login credentials for other social networks in case the user wishes to link his/her other social networks with the service offered by the server **104** herein. The user may then provide his/her login credentials for other social networks, which in turn allows the user to view multiple social networks of his/her choice into a window-in-window viewer **204** (as shown in FIG. 2B, with reference to FIGS. 1 and 2A) of the service. With the window-in-window viewer **204**, the user may access anyone or all the social networks at a single service of the server **104** herein.

In an aspect, from the other social networks linked onto the service of the server **104**, the server **104** may import contacts into an EC master database maintained for the user of the communication device **102-1**. Such imported contacts may be synchronized regularly or periodically with the updated profile related information from the linked other social networks, so as to maintain an up-to-date EC master database of EC files or cards.

FIG. 2C, with reference to FIGS. 1 through 2B, illustrates an example of a service website **200** associated with the server **104**. The service website **200** may provide a user with a network-based storage for personal contact information, creation of a custom social EC cards to send to discovered, or discovering, users who are also members of the service, for the purpose of providing personal contact information including personal attributes such as picture(s) to other users/member and for accessing personal contact information including personal attributes such as picture(s) of other users/members of the service. Further, as may be seen from FIG. 2C, the service website **200** may include a universal chat tool **206**. The universal chat tool **206** may have the ability to login with multiple user IDs over various other social networks chat. For instance, a user may chat with users or contacts using Google®, AIM®, Yahoo!® services

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and other chat applications. In one example, the universal chat in accordance with the embodiments herein may be performed between the members of the service offered or managed by the server **104** herein.

FIG. 3, with reference to FIGS. 1 through 2C, illustrates an architecture **300** implementing the server **104** in accordance with an exemplary embodiment. As shown in FIG. 3, the architecture **300** may include the communication device **102-1** communicating with the server **104** over the communication network **108**.

As described above, the communication device **102-1** may include a CSA **302**. The CSA **302** may reside on any communication device, and is not limited to smartphone applications, which means that the CSA **302** would be able to provide support to multiple operating systems. The CSA **302** may be configured to collect characteristics, such as the device identification number, from the communication device **102-1** for the purpose of associating the communication device **102-1** with a user account **304** maintained at the server **104**. This association between the unique identifier, such as the device identification number, and the user account **304** may be used to report the location of the communication device **102-1** to the server **104** dynamically and authenticate the user with communication device **102-1** used.

In order to completely utilize the communication device's features provided by the service including dynamic search of members in spatial proximity, the user may have to install the CSA **302** to the communication device **102-1**. The CSA **302** associated with the server **104** may enable the user to update, replace, and revise the social profile or personal attribute information, modify, hide or publish profile information (at the server) as contained in the user's contact information; e.g., the information contained in the user's profile which may be transmitted when the user initiates discovery process. Furthermore, the CSA **302** may allow the user to indicate interest in connecting with a member, or the user is discovered by other members searches and communicate to other members through features such as SMS, chat, text, and other features.

In accordance with the embodiments herein, the server **104** may associate each communication device **102** with a member account **304** of the service using a unique identifier such as an identification number. The device identification number may be used for future location reporting and authentication for secure and future log in, if needed.

In an aspect, the member account **304** may store or maintain the profile information related to user's EC card **306**. In addition to the user's or member's EC card **306**, the member account **304** may include an EC master database **308** for storing or maintaining the EC cards/files of the users/members which at in contact with the user. Further, the member account **304** may include storage **310** for storing data temporarily during processing or execution of various tools and/or applications of the service offered by the server **104**.

In addition to the member account **304**, the server **104** may include other member accounts **312** as shown in FIG. 3. Further, the server **104** may include contents **314** that may be purchased and billed to the user of the communication devices **102** associated with the service of the server **104**.

Further, in an aspect, the member account **304** may be associated with a link tool **306** allowing the server **104** to link and navigate the window-in-window viewer **204** from one social network window to another social network window, and may be associated with the universal chat tool **206**

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allowing the user to chat with other members/users having messenger accounts of different social networks.

With such an architecture **300** in place, the user of the communication device **102-1** may communicate with the server **104** to create his/her membership/user account **304** and then maintain the EC master database **308** for utilizing various services of the server **104**.

Once the user of the communication device **102-1** has created his/her membership account and associated profile on the service website of the server **104**, the user may connect with the server **104** using CSA **302** to enquire about other members in the spatial proximity of the communication device **102-1**. In an example, the range of the spatial proximity may correspond to the range of standard short-range wireless communication. The server **104**, after receiving an inquiry on members in the spatial proximity, may transmit an invitation to connect with list of members, including name and picture of the members, to the requesting communication device **102-1**, which is then displayed on screen of the communication device **102-1**. Thus, the server **104**, not only provides a list of members, but also provides names and pictures of the members for easy identification. Once the requesting user receives the list of pictures and names, the user may select from the communication device **102-1** for exchange of EC cards or contact information. Once the user selects any one or more member(s) from the received list of members, the server **104** may transmit an invitation to connect the requesting user/member with the selected member(s). At this point, when the server **104** receives an acceptance for exchange of EC cards from the selected member and the requesting member, the server **104** may establish a communication between the requesting user and the selected member to exchange the EC cards or contact information. The detailed working and operation of the server is further explained with reference to FIG. 4.

FIG. 4, with reference to FIGS. 1 through 3, illustrates various components of a server **104**. In an example, the server **104** may be implemented to facilitate service accessible through a website or a client-side application. The server **104** may be in communication with one or more communication devices **102** through the communication network **108** as discussed above. In an example implementation, the communication devices **102** may be configured as mobile phones, smart phones, laptops, notepads, or any other network-enabled devices. In an example, the communication devices **102** may include a client-side application (CSA) **302** to access the service of the server **104**. As an example, the CSA **302** may be a web application or Bluetooth® application.

In an aspect, the server **104** may include one or more processor(s) **402**. The one or more processor(s) **402** may be implemented as one or more microprocessors, microcomputers, microcontrollers, digital signal processors, central processing units, logic circuitries, and/or any devices that manipulate data based on operational instructions. Among other capabilities, the one or more processor(s) **402** are configured to fetch and execute computer-readable instructions stored in a memory **404** of the server **104**. The memory **404** may store one or more computer-readable instructions or routines, which may be fetched and executed to create or share the data units over a network service. The memory **404** may include any non-transitory data storage device including, for example, volatile memory such as RAM, or non-volatile memory such as EPROM, flash memory, and the like.

The server **104** may also include an interface(s) **406**. The interface(s) **406** may include a variety of interfaces, for

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example, interfaces for data input and output devices, referred to as I/O devices, storage devices, and the like. The interface(s) 406 may facilitate communication of the server 104 with various communication devices 102 coupled to the server 104. The interface(s) 406 may also provide a communication pathway for one or more components of the server 104. Examples of such components include, but are not limited to, module(s) 408 and data 410.

The module(s) 408 may be implemented as a combination of hardware and programming (for example, programmable instructions) to implement one or more functionalities of the module(s) 408. In examples described herein, such combinations of hardware and programming may be implemented in several different ways. For example, the programming for the module(s) 408 may be processor executable instructions stored on a non-transitory machine-readable storage medium and the hardware for the module(s) 408 may include a processing resource (for example, one or more processors), to execute such instructions. In some examples, the machine-readable storage medium may store instructions that, when executed by the processing resource, implement the module(s) 408. In such examples, the server 104 may include the machine-readable storage medium storing the instructions and the processing resource to execute the instructions, or the machine-readable storage medium may be separate but accessible to server 104 and the processing resource. In other examples, the module(s) 408 may be implemented by electronic circuitry. In an example, the module(s) 408 may include a registration module 412, a detection and notification module 414, a connection establishment module 416, and other module(s) 418. The other module(s) 418 may implement functionalities that supplement applications or functions performed by the server 104 or the module(s) 408.

The data 410 may include data that is either stored or generated as a result of functionalities implemented by any of the components of the module(s) 408. In one example, the data 410 may include a server database 420 to store any contact information exchanged and synchronized with the communication devices 102.

In operation, when a first user associated with a first communication device 102-1 and a second user associated with a second communication device 102-2 wish to create an account with a service offered by the server 104 herein, the users of these devices 102-1, 102-2 may install a client-side application (CSA) 302 on their respective devices 102-1, 102-2 to establish a communication with the server 104. In an alternate example, the users may directly access the service website of the server 104 to create an account. Once the user accesses the server 104 via CSA or service website, the users may create their respective accounts by creating respective first and second profiles using the registration module 412. Each of the first and second profiles may include a picture and name of a respective user.

Once the user profiles are created, the registration module 412 may store these user profiles in the web database of the server 104. While storing the user profiles, the registration module 412 may prompt the users to store their contacts already stored on their respective devices or other networking servers, in the web database. For example, the registration module 412 may ask the users to allow synchronization of their device contacts with the web database to update the contacts on the web database. In an alternative example, the registration module 412 may prompt the users to save their user IDs and passwords of other networking servers in the encrypted form on the server 104, so as to allow the server 104 to import contacts from these other networking servers.

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In one example, the registration module 104 may periodically synchronize the information related to the user profile and contacts from the communication device and the other networking servers, to ensure that the updated information is stored in the web database, or Electronic Coordinates (EC) master database, of the server 104.

Once the user profiles and the user contacts are stored and updated, the detection and notification module 414 may continuously monitor the locations of the devices associated/ member with the service of the server 104. In an example, the detection and notification module 414 may trigger the monitoring upon receiving a request from a user of one of the first and second communication devices. Further, the detection and notification module 414 may continuously monitor the locations of the first and second devices using dynamic locations obtained from GPS, etc.

Once the detection and notification module 414 locates the second communication device in the spatial proximity of the first communication device, the detection and notification module 414 may transmit information about a user profile associated with the first communication device 102-1 to the second communication device 102-2, and also transmits another information about a user profile associated with the second communication device 102-2 to the first communication device 102-2. In one example, the information about the first and second profiles may be transmitted and presented as an invitation to connect with other communication device. In an example, the invitation may present at least a user picture, a user name, and an option to accept/ reject the invitation.

Once both the users accept the invitation to connect through the detection and notification module 414, the connection establishment module 416 may store a connectivity information in the web database that from now onwards the users of the first and second communication devices 102-1, 102-2 are contacts of each other, and then establish a communication between the CSA 302 implemented on the first and second communication devices 102-1, 102-2 to exchange the EC files or contact information. In one example, the CSA 302 implemented on the first and second communication devices 102-1, 102-2 may be either a Bluetooth® app or a web app. In an example, in the case of a Bluetooth® app, the first and second communication devices 102-1, 102-2 may exchange EC files or contact information over a Bluetooth® communication link. In another example, in the case of a web app, the first and second communication devices 102-1, 102-2 may exchange or update EC files or contact information over service website facilitated via cellular services by the server 104.

Further, once the EC files or the contact information are exchanged between the first and second communication devices 102-1, 102-2, the server 104 may facilitate the universal chat tool 206. The tool 206 may facilitate the users of the first and second communication devices 102-1, 102-2 to communicate with each other using message tools with their accounts maintained at different networking servers. Thus, with the servers (systems) and methods, users having accounts maintained at disparate networking servers may communicate with each other.

Accordingly, the servers (systems) and methods as provided by the embodiments herein enable the users to exchange EC files over a short-range wireless communication link, allow the users to add the contact information from other networking servers/portals to EC master database of the system, allow the ability to link the online maintained

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contact information of EC files with a universal chat tool, and allow users to chat across the disparate networking servers/portals.

The operation of the server **104** is further described in connection with FIGS. **5** through **8**, with reference to FIGS. **1** through **4**. In an exemplary implementation, upon creating a user account with the service of the server **104**, a text message may be sent on the number associated with the communication device **102**. The text message may include a link that once clicked will result into installation of client-side application (CSA) **302** on the communication device **102**. In some examples, the CSA **302** implemented on the first and second communication devices **102-1**, **102-2** may be either a Bluetooth® app, an NFC app, or a web app.

Upon installation of the CSA **302**, the user may utilize the CSA **302** to update the online profile with the new contacts in various ways. In an example, the communication devices **102-1**, **102-2** may include application interface management software (AIMS) **502**, **504** which facilitates the storage of newly exchanged or acquired EC files in a temporary or permanent storage library **506**, **508**.

Further, once the newly exchanged or acquired EC files are stored in the temporary or permanent storage library **506**, **508**, the CSA **302** may update the online profile using cellular signals, or hardware connection that allows the communication device to be plugged into a computer. For example, as shown in FIGS. **5** and **6**, the first communication device **102-1** may include the AIMS **502**, which may decide based on the available network conditions that whether the communication device **102-1** may be connected through web database hardware interface **510** or cellular network **512** for synchronizing or updating the web database with the newly exchanged or acquired EC files.

In an example, after complete update or synchronization of the user profile, the user may download and store his/her contacts on the communication device **102-1** in case the communication device **102-1** has required storage capacity in the temporary or permanent storage library **506**, **508**.

Once the contacts at the communication device **102-1** and the web database are synchronized, the user of the communication device **102-1** may request the server **104** to detect or locate another communication device in spatial proximity of the communication device **102-1**. Upon receipt of the request, the server **104** may perform a detection to search another communication device in the spatial proximity of the requesting communication device **102-1** using the Bluetooth® or Short range connection **514** of the requesting communication device **102-1** and presents the user profile (picture and name of user) associated with the detected communication device **102-2** to the requesting communication device **102-1**. If the user of the requesting communication device **102-1** accepts the request to connect with the detected communication device **102-2**, the user of the requesting communication device **102-1** may indicate this and the process of informing/notifying the other member associated with the detected communication device **102-2** is managed by the server **104** over cellular network **512**. Thus, no direct contact occurs between users (of different communication devices) at this point and will not unless both the users elect to exchange personal information such as device numbers to connect outside of provided service and features. This managed communication by the server **104** may ensure privacy and allows users to reject connections or terminate conversations without having to worry about direct connections potential issues.

FIG. **7**, with reference to FIGS. **1** through **6**, illustrates a further example of notification to the detected users alerting

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them to exchange request. The notification or invitation may include the users' profile including the users' name and picture, along with an option to accept or reject. For instance, referring to FIG. **7**, when a user BOB of a requesting device **102-1** transmits an invitation to connect with a user JOHN (whose device **102-2** is found to be in spatial proximity of the BOB's device **102-1**), BOB's device **102-1** may present a message that "JOHN's device **102-2** has CSA **302** and therefore would you wish to exchange EC?". Similarly, John's device **102-2** may present a message that "BOB would like to exchange EC". The invitation to connect includes at least a picture and name of the users, and does not include the contact details such as the device numbers or addresses of the users. Once the users (BOB and John) provide a positive feedback in response to the message displayed on their devices, their devices **102-1** and **102-2** may establish a short-range wireless connection to exchange contact details or EC.

FIG. **8**, with reference to FIGS. **1** through **7**, shows an alternative example of a notification when the detected device **102-2** of JOHN does not have a CSA installed thereon. In such a scenario, the server **104** may transmit a SMS (short message service) message with a link that once clicked/accepted by JOHN may divert the JOHN to service website of the server, to accept or reject the invitation. Also, acceptance of the invitation may facilitate the download of the CSA **302** on JOHN's device **102-2** to exchange contact information or EC with device **102-1** of BOB. Also, in the scenario represented in FIG. **8**, the requesting device **102-1** of BOB may be provided with a notification that the detected device **102-2** of JOHN does not have the required CSA **302** and therefore would BOB like to share his EC cards without receiving acceptance from the detected device **102-2**, and invite JOHN to join his network over service website facilitated by the server **104**.

In the examples shown in FIGS. **7** and **8**, the user (JOHN) of the detected device **102-2** may have the option of accepting the invitation, ignoring/declining or engage in services provided by the server **104**, so as to chat or SMS with or without accepting connection with the user of the requesting device **102-1**. Since all of the communications between members/users is managed by the server **104**, the server database **420** may store any contact information exchanged and add it through a synchronization method with the CSA **302** as well as keep the history of any conversations/SMS between the members/users.

Further, the CSA **302** may include features such as storing edits to profiles or communication between the members/users and synchronizes to the server database **420** for storage once connection between the CSA **302** and server **104** is established. This dual storage feature allows the user to restore communication between users on a new device if the device in use is lost or damaged as well as restoring all account information.

In the case where a user switches or loses a device, all the user has to do is to install the CSA **302** on the new device and login with his/her credentials. Once an internet connection is established between the new device, the CSA **302** and server **104**, and user credentials are verified; the server **104** synchronizes all stored information to the new device, and the new installed CSA **302** reports the new device unique hardware identification number for further services.

Further, the server **104** facilitates communication between the two users' devices **102-1**, **102-2** and may provide additional features such as the ability to chat via SMS or email service and other services with reference to FIGS. **1** through **8**.

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FIGS. 9 and 10, with reference to FIGS. 1 through 8, illustrate example methods 900 and 1000, respectively, for establishing a connection between at least two communication devices 102-1, 102-2 for enabling the users of the devices 102-1, 102-2 to communicate with one another. The order in which the methods are described is not intended to be construed as a limitation, and any number of the described method blocks may be combined in any order to implement the methods, or an alternative method. Furthermore, methods 900 and 1000 may be implemented by processing resource or communication device(s) through any suitable hardware, non-transitory machine-readable instructions, or combinations thereof.

It may also be understood that methods 900 and 1000 may be performed by programmed communication devices, such as communication device(s) 102 or server 104. Furthermore, the methods 900 and 1000 may be executed based on instructions stored in a non-transitory computer readable medium, as will be readily understood. The non-transitory computer readable medium may include, for example, digital memories, magnetic storage media, such as one or more magnetic disks and magnetic tapes, hard drives, or optically readable digital data storage media. The methods 900 and 1000 are described below with reference to communication device(s) 102 as described above; other suitable systems for the execution of these methods may also be utilized. Additionally, implementation of these methods 900, 1000 is not limited to such examples.

In FIG. 9, with reference to FIGS. 1 through 8, at block 902, the method 900 may include communicating a server 104 with a first communication device 102-1 of a first user and a second communication device 102-2 of a second user over communication links comprising a cellular network 108. At block 904, the method 900 may include storing, in a database 420 of the server 104, a first profile associated with the first user and a second profile associated with a second user, wherein both the first and the second profiles comprise at least a picture and a name of their respective users.

At block 906, responsive at least to the first communication device 102-1 and the second communication device 102-2 coincidentally located within a spatial proximity of one another, the method 900 may include transmitting, from the server 104, first information about the second profile to the first communication device 102-1 and second information about the first profile to the second communication device 102-2. In an example, the first communication device 102-1 may display a first invitation comprising at least a picture and name from the second profile, and the second communication device 102-2 may display a second invitation comprising at least a picture and name from the first profile. Further, the first communication device 102-1 may be configured to receive a first input from the first user if the first user is willing to accept the first invitation, and the second communication device 102-2 may be configured to receive a second input from the second user if the second user is willing to accept the second invitation.

At block 908, the method 900 may include receiving, at the server 104, a first response from the first communication device 102-1 representing the first input. At block 910, the method 900 may include receiving, at the server 104, a second response from the second communication device 102-2 representing the second input. At block 912, the method 900 may include storing connectivity information in the database 420 in response to both the first and the second input being positive. In an example, the connectivity information may represent that the first and second users are

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enabled to communicate using the first and second communication devices 102-1, 102-2. At block 914, the method 900 may include establishing a connection between the first and second communication devices 102-1, 102-2 for enabling the first user and the second user to communicate with one another.

FIG. 10, with reference to FIGS. 1 through 9, provides another example method 1000 for establishing a connection between at least two communication devices 102-1, 102-2 for enabling the users of the devices 102-1, 102-2 to communicate with one another. At block 1002, the method 1000 may include storing, in a database 420 of the server 104, a first profile associated with the first user and a second profile associated with the second user. In an example, both the first and second profiles comprise at least a picture and a name of their respective users, and are able to associate each user profile with a unique hardware identifier associated with the users' devices 102-1, 102-2.

At block 1004, the method 1000 may include identifying a unique hardware identifier of the second communication device 102-2 within a spatial proximity of the first communication device 102-1. At block 1006, the method 1000 may include transmitting the second profile of the second user to the first communication device 102-1 as an invitation to connect with the second communication device 102-2, based on the identification of the unique identifier. At block 1008, the method 1000 may include transmitting the first profile of the first user to the second communication device 102-2 as an invitation to connect with the first communication device 102-1.

At block 1010, the method 1000 may include notifying the first communication device 102-1 when the second user has accepted or rejected the invitation to connect the second communication device 102-2 with the first communication device 102-1. At block 1012, the method 1000 may include, in response to the acceptance of the invitation by the second user, storing the connectivity information between both the first and second communication devices 102-1, 102-2 in the database 420 and facilitates a chat feature between the first and second users using the respective communication devices 102-1, 102-2 connected to the server 104.

Thus, the embodiments herein allow for the locating of devices 102 and the ability to communicate amongst the devices 102 by associating personal attributes to each device 102 such that when a search is performed, a face picture is found rather than a hardware ID number (e.g., device identification number). Associating personal attributes such as pictures and personal attributes allow users to identify other members and select members whom they wish to exchange contacts with or connect with through the social network.

Further, the systems and methods described herein may be used for meeting people including discovering people; e.g., viewing their pictures, names, or other personal information, and selecting one or more people to send an invitation to. The invitation may take the form of a social card, EC card, or other manner of engaging another person in a social atmosphere like quick SMS or flag that there is interest of connecting, or even a business setting such as a meeting, trade show, conference, and the like.

The embodiments herein provide a server 104 that cross-references a location of a first user's device 102-1 with registered members in a spatial proximity of the first user's device 102-1 and returns the results by disclosing personal user attributes including pictures and names of all members in the spatial proximity of the first user's device 102-1. The first user who initiated the inquiry may select from the

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results returned any discovered user he/she wishes to connect with and send a form of invitation to connect using network available tools such as email, SMS, text or any customized invitation form. The invitation to connect to the inquiring user would include his/her personal attributes including picture and name. The discovered member who received invitation may accept, ignore or decline connecting with the inquiring user. At the same point of time, the first user may also receive an invitation from the server **104** to accept, ignore or decline connecting with the discovered member. Upon receipt of a positive acceptance response from both users, the server **104** establishes a connection to exchange the user EC cards.

The communication between requesting and discovered users may then proceed through services provided by the social network server **104**, thereby bypassing the limitations of communication over one protocol, network limitation/fees, or incompatibility for different types of devices. As an example, one member may be connected to the service of the social network and the communication device through internet service over a cellular signal while the other person may be connected to the same service through a WiFi® signal that provides internet access.

The exemplary embodiment also relates to a system/device for performing the operations discussed above. This system/apparatus/device may be specially constructed for the required purposes, or it may comprise a general-purpose computer selectively activated or reconfigured by a computer program stored in the computer. Such a computer program may be stored in a computer readable storage medium, such as, but is not limited to, any type of disk including floppy disks, optical disks, CD-ROMs, and magnetic-optical disks, read-only memories (ROMs), random access memories (RAMs), EPROMs, EEPROMs, magnetic or optical cards, or any type of media suitable for storing electronic instructions, and each coupled to a computer system bus.

The foregoing description of the specific embodiments will so fully reveal the general nature of the embodiments herein that others can, by applying current knowledge, readily modify and/or adapt for various applications such specific embodiments without departing from the generic concept, and, therefore, such adaptations and modifications should and are intended to be comprehended within the meaning and range of equivalents of the disclosed embodiments. It is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

What is claimed is:

1. A server configured to communicate with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network, wherein the server comprises a processor configured to:

store in a data storage device a first profile associated with the first user and a second profile associated with a second user, both the first and the second profile comprises at least a picture and a name of their respective users thereby automatically eliminating anonymous communication of the first profile and the second profile between member devices without intervention by the first user or the second user;

associate each member profile with a unique hardware identification associated with the member devices;

identify a unique ID of a second member in the vicinity and spatial proximity of a first member and provide the first member with the profile of the second member

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comprising a picture and name to facilitate a connection between both members;

send the second member the profile of the first member including the picture and name upon the first member initiating an invite to the second member to connect over a networking service;

inform the first member if the second member has accepted or rejected the invite to connect initiated by the first member; and

once the second member accepts the invite of the first member, store the connectivity between both members in the data storage device and facilitate a chat feature between them using respective devices connected to the server,

wherein the first user and the second user are members of a same social network, and the processor is to disclose non-anonymous social network attributes including a picture, name, and location of the first user and the second user in a vicinity or within a predetermined distance from one another for the purpose of connecting members of the same social network based in part on proximity calculations between connecting members,

wherein the server permits discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by the first user, wherein the server permits the discoverable members to have their respective devices unconnected to an internet connection service at the time of the search being conducted by the first user, and wherein any of turned off devices and disconnected devices is discoverable by the server as the internet connection service is configured to report the any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to the first user.

2. The server of claim 1, further comprising a context information retrieval module, which when executed by the one or more processors, provides the first and second communication devices with the profile related information beyond the first and second user information comprised in first and second invitations.

3. The server of claim 1, wherein the server is to communicate with a second server, and wherein the second server is to provide social networking services that operate independently of the server.

4. The server of claim 3, wherein the server is to receive profile related information from the second server.

5. The server of claim 3, wherein the server is to connect with a contact exchanging application executing on the first and second communication devices to execute services and features available with the server.

6. The server of claim 5, wherein the contact exchanging application is to store updated contacts information and profiles of user contacts including pictures.

7. The server of claim 5, wherein the server is to utilize the contact exchanging application of the first communication device to discover the second communication device present within the spatial proximity, and to present a picture and name of the second user associated with the second communication device on user interface of the first communication device before the first user deciding to send an invite to connect.

8. The server of claim 5, wherein the contact exchanging application is to present the second user with an option to accept or reject the invitation sent by the first user by sending to the server the acceptance or rejection response of

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the second user, and allowing the server to communicate the acceptance or rejection response to the first user.

9. A method for communicating a server with a first communication device of a first user and a second communication device of a second user over communication links comprising a cellular network, the method comprising:

storing, in a data storage device of the server, a first profile associated with the first user and a second profile associated with the second user, wherein both the first and second profiles comprise at least a picture and a name of their respective users thereby automatically eliminating anonymous communication of the first profile and the second profile between user devices without intervention by the first user or the second user;

associating each user profile with a unique hardware identifier associated with the users' devices;

identifying a unique hardware identifier of the second communication device within a spatial proximity of the first communication device;

based on the identification of the unique identifier, transmitting the second profile of the second user to the first communication device as an invitation to connect with the second communication device;

transmitting the first profile of the first user to the second communication device as an invitation to connect with the first communication device;

notifying the first communication device when the second user has accepted or rejected the invitation to connect the second communication device with the first communication device; and

in response to the acceptance of the invitation by the second user, storing the connectivity information between both the first and second communication devices in the data storage device and facilitating a chat feature between the first and second users using the respective communication devices connected to the server,

wherein the first user and the second user are members of a same social network, and the server is to disclose non-anonymous social network attributes including a picture, name, and location of the first user and the second user in a vicinity or within a predetermined distance from one another for the purpose of connect-

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ing members of the same social network based in part on proximity calculations between connecting members,

wherein the server permits discoverable members to have their respective devices turned on or turned off at a time of a search being conducted by the first user, wherein the server permits the discoverable members to have their respective devices unconnected to an internet connection service at the time of the search being conducted by the first user, and wherein any of turned off devices and disconnected devices is discoverable by the server as the internet connection service is configured to report the any of turned off devices and disconnected devices as discoverable based on a latest static and dynamic location in proximity to the first user.

10. The method of claim 9, further comprising providing the first and second communication devices with the profile related information beyond the first and second user information comprised in the first and second invitations.

11. The method of claim 9, further comprising receiving profile related information from a networking server.

12. The method of claim 9, further comprising receiving profile related information from a networking server present in communication with the server.

13. The method of claim 9, further comprising connecting with a contact exchanging application executing on the first and second communication devices to execute services and features available with the server on the first and second communication devices.

14. The method of claim 13, further comprising discovering, using the contact exchanging application of the first communication device, the second communication device present within the spatial proximity, and presenting picture and name of the second communication device on user interface of the first communication device before the first user deciding to send an invite to connect.

15. The method of claim 13, further comprising presenting, by the contact exchanging application, an option to the second user to accept or reject the invitation sent by the first user, sending to the server the acceptance or rejection response of the second user, and letting the server communicate the acceptance or rejection response to the first user.

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CERTIFICATE OF SERVICE

I certify that I electronically filed the foregoing with the Clerk of the Court for the United States Court of Appeals for the Federal Circuit by using the appellate CM/ECF system. I further certify that all participants in the case are registered CM/ECF users and that service will be accomplished by the appellate CM/ECF system.

CERTIFICATE OF COMPLIANCE

This brief complies with the type-volume limitation of Fed. R. App. P. 32(a)(7)(B) because it contains 8,059 words, excluding the parts of the brief exempted by Fed. R. App. P. 32(f).

This brief also complies with the typeface requirements of Fed. R. App. P. 32(a)(5)(A) and the type style requirements of Fed. R. App. P. 32(a)(6) because it has been prepared in a proportionally spaced typeface using Microsoft Word in Times New Roman font size 14.

/s/ Nagendra Setty
Nagendra Setty